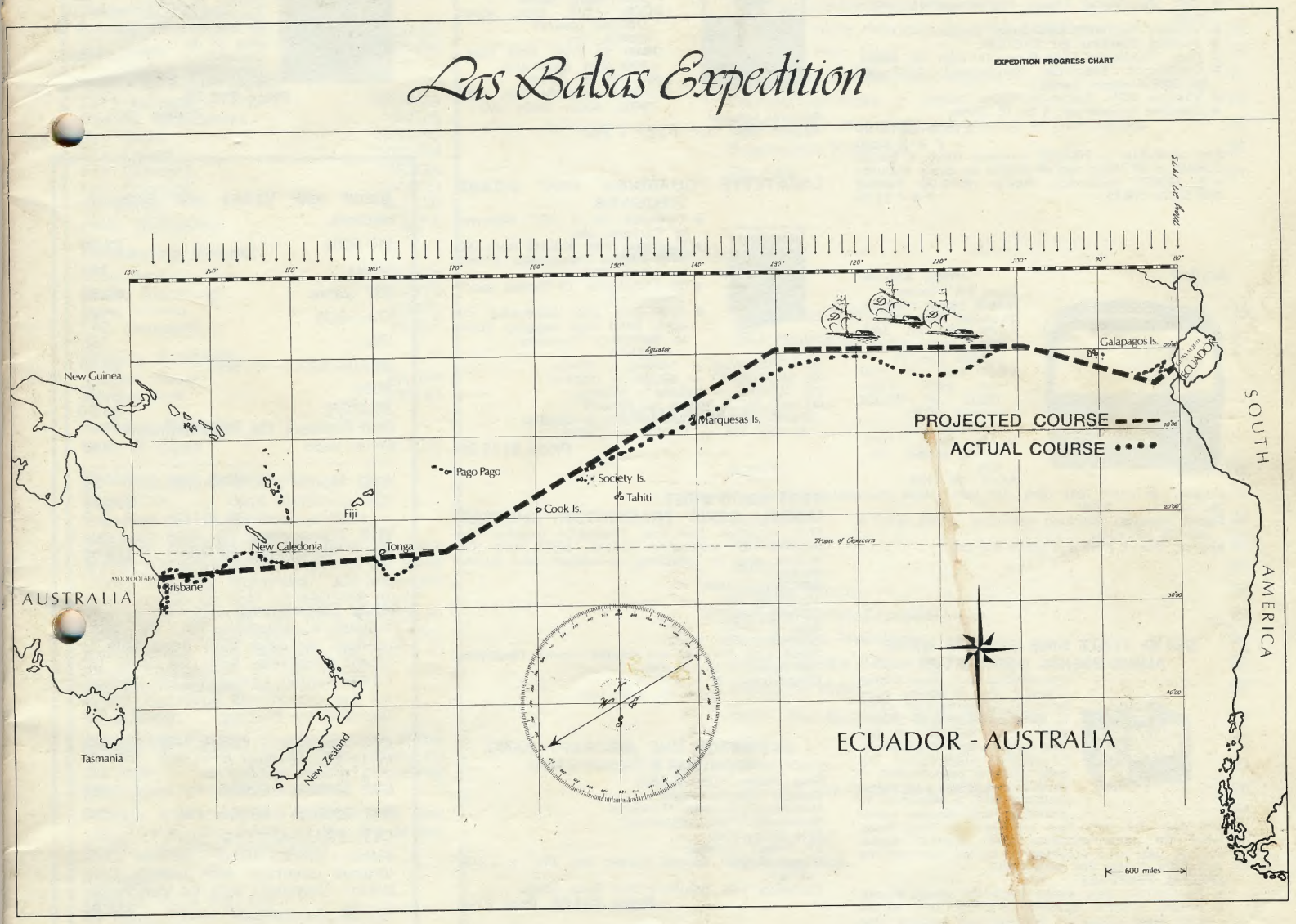
amateur radio

JANUARY, 1974



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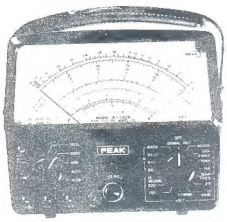

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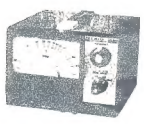

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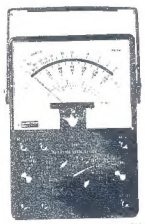

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FRONT COVER:

Official Las Balsas map showing intended route and actual route of the expedition. See story on page 13.

QSP

THE BUSINESS OF THE EXECUTIVE

As the Institute embarks on a New Year's programme, it is timely that we the members pause and consider a few cardinal points.

Based, as it is, in Melbourne; with Federal Councillors in each Division, the Executive of our Institute is expected to plan and direct the future of the Institute and to reach decisions on those important matters of policy which guide and effect the destiny of amateur radio in Australia.

Maintenance of links with kindred organizations overseas is also expected of the Executive.

To operate such a fragmented organization within a country the size of ours — and operate it with cohesion — is no small achievement.

The WIA has the distinction of being among the oldest Amateur bodies in the World and it is only by cohesive action that it can remain in the forefront of National and International Amateur affairs.

So what? you say.

The business of the Executive is of tremendous importance to all amateur radio operators — WIA members or not — but that business must not include trifling details and regular routine matters.

Ideally, the Executive should be protected from trivia and mundane routine This could perhaps be achieved, at least in part, by ensuring that business which is placed before the Executive is previewed by Divisional Councils; or carries with it some clear-cut statement or recommendation from such Councils or from the appropriate standing committee; always remembering that your Divisional Federal Councillor is your voice, your representative on the Executive.

This Editorial was inspired in part by the Editorial of the Journal of the Institution of Engineers, Australia, Dec 1972; and a quotation from a report written three years ago for the Institution of Civil Engineers, London.

The quotation applies equally well to the WIA — and perhaps to all governing bodies, boards and committees of management of large organizations. ". . . The Council itself (as opposed to any committees it may appoint) should be concerned only with a general surveillance of the profession and its interests and the consideration and approval of policies and broad programmes of development. The details of implementation and organizational housekeeping are not matters for major governing bodies. When fatally interesting detail competes time and attention with fundamental issues it is always the latter that suffers this the Institution cannot afford . . ."

Therefore, our New Year's Resolution could well be to assist the Executive by enabling it to have a simpler business paper with fewer (but exclusively important and well-documented) matters.

Thus, sufficient time and effort can be provided for full debate on affairs which properly demand the attention of the governing body of our Institute.

John McL. BENNETT
VK3ZA.

SUBSCRIPTIONS 1974.

MEMBERS ARE EARNESTLY REQUESTED TO SEND THEIR SUBSCRIPTION PAYMENTS DIRECT TO THE EXECUTIVE OFFICE AS SOON AS POSSIBLE.

A gentle reminder that subscriptions to the W.I.A. are due and notices should be in the hands of all members by now.

If you joined the W.I.A. last year — except new VK2 members — you should have paid a full year subscription. This would have been pro-rata for the number of months you received AR last year according to the address label code and the balance would be a credit to you for 1974. Your subscription notice would take your liability through to 31st December 1974. New VK2 members however would, in general, have paid only the pro-rata due up to the end of 1973 and their subscription notices would therefore show a full year liability for 1974. Any debits or credits in the EDP file would be added or deducted for the 1974 liability for all other members. As a few members paid twice in 1973 they would have little or nothing to pay in 1974. The WIA Divisional 1974 subscription rates are printed elsewhere in this issue.

To avoid delays in nofications to the Executive office, which could cause names to be automatically deleted from the EDP addressing labels for AR

Members are enjoined to make payment BEFORE receiving FINAL NOTICES because the EDP system will indeed operate automatically. No payment within a given time, no AR.

Cheques, postal orders and money orders should be crossed not negotiable and made out to "W.I.A." or "WIA Toorak" as the case may be. Cash should not be sent through the post. No receipts will be issued unless specially requested — clearance of your cheque will be a receipt in itself in accordance with normal commercial practice.

Remember — the Executive office merely processes subscription (through EDP) and keeps the membership records on behalf of the Divisions.

The address once again is —

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RTS

A total of 33 November AR's were returned to sender (i.e. the W.I.A. Executive office) by the Post Office up to 20th November. This seems to qualify for some record or other. 12 came back from VK3 addresses, 9 from VK4, 4 each from VK5 and VK6. 25 came back 'left address', 5 were unknown or 'not at address'. It seems as if the APO's new re-direction fee of $1 per month might be unpopular. All the addresses were the latest correct addresses, up to 15th October, known to the Executive office. The cost of mailing replacement copies would be nearly $5 quite apart from the time element involved. **PLEASE** therefore advise any address change well in advance because it cannot be effective for AR for at least one issue. Any change notification received after the middle of a month cannot be applied to the following month's AR because of lead times required for EDP processing, print quantities and the like.

SUBSCRIPTION RATES — 1974

The following rates have been notified to the Executive office by Divisions as applicable for the year 1974 —

Division	F	A	T	C	S
NSW	10.00	9.50	9.50	10.00	6
VIC.	12.50	12.00	12.00	12.50	6.00
QLD. x	12.50	12.50	11.00	11.00	4.00
SA	12.50	11.00	11.00	11.00	4.00
WA	12.50	12.00	12.00	12.50	6.00
TAS	11.00	9.00			6.00

Grades:

F — Full City
A — Associate City
C — Full Country
T — Associate Country
S — Other standard rate grade (this grade includes certain pensioners and students)
X and G are two further non-standard grades. G members receive AR but X members do not.

x Includes PNG.

AR is available on direct subscription to Libraries, Government and similar instrumentalities in Australia and to overseas readers. The rate is $6.00 per annum post paid (surface mail). A reciprocal agreement on rates exists between NZART and WIA.

AIR MAIL for AR to oceania areas (including Papua and New Guinea) will cost $3.60 extra per annum.

Satellite "1000" Award

Congratulations to VK7PF on qualifying for and on obtaining the first Satellite "1000" Award (No. 157 of 5.11.1973) by any VK amateur. For brief details of this award please see the centre page photograph and caption in A.R. July '73.

a simple single band transmitter

H. L. Hepburn VK3AFQ

4 Elizabeth Street, East Brighton, 3187.

Whilst there have been undeniable technical advantages in the world wide swing to the use of single side band transmission over the past ten years or so, there is still a significantly large number of amateurs who prefer the AM-CW mode for local natter sessions. The 1825 kHz net in VK3 and 160 metre nets in other States are still strongly oriented towards AM and a not inconsiderable number of AM stations can still be found on 80 and 40 metres. Thus no apologies are tendered for presenting an up to date AM design.

Whilst the transmitter now described is intended primarily for home or mobile use on 160 metres, it is easily adapted for 80 or 40 metres, the only changes being in the appropriate coils and resonating capacitors. The design is fully solid state and incorporates features to overcome the poor availability of suitable tuning capacitors and modulation transformers.

VFO

Fig 1 gives the circuit diagram of the VFO-exciter. A 2N3565 n-p-n transistor is used in Lees *synthetic rock* circuit and generates on signal frequency. Output from the oscillator is buffered by means of a 2N5245 FET and then amplified by an MC1550 IC. More than sufficient output is available to drive the subsequent linear amplifier and provision is made in the source circuit of the FET to vary the drive by means of a 1K trim pot.

The exciter was first built using a conventional 50 pF variable capacitor to tune L1. However, it was then found that there was no reliable source for further supplies of suitable variable capacitors and — of necessity — alternative tuning arrangements had to be used. The components contained in the dotted *box* of Fig 1 replace the conventional capacitor with a voltage tuned diode configuration.

Thermal stability with the Varicap is equally as good as with a normal capacitor and there is a significant improvement in the mechanical stability since there are no moving plates in which vibrations can be induced.

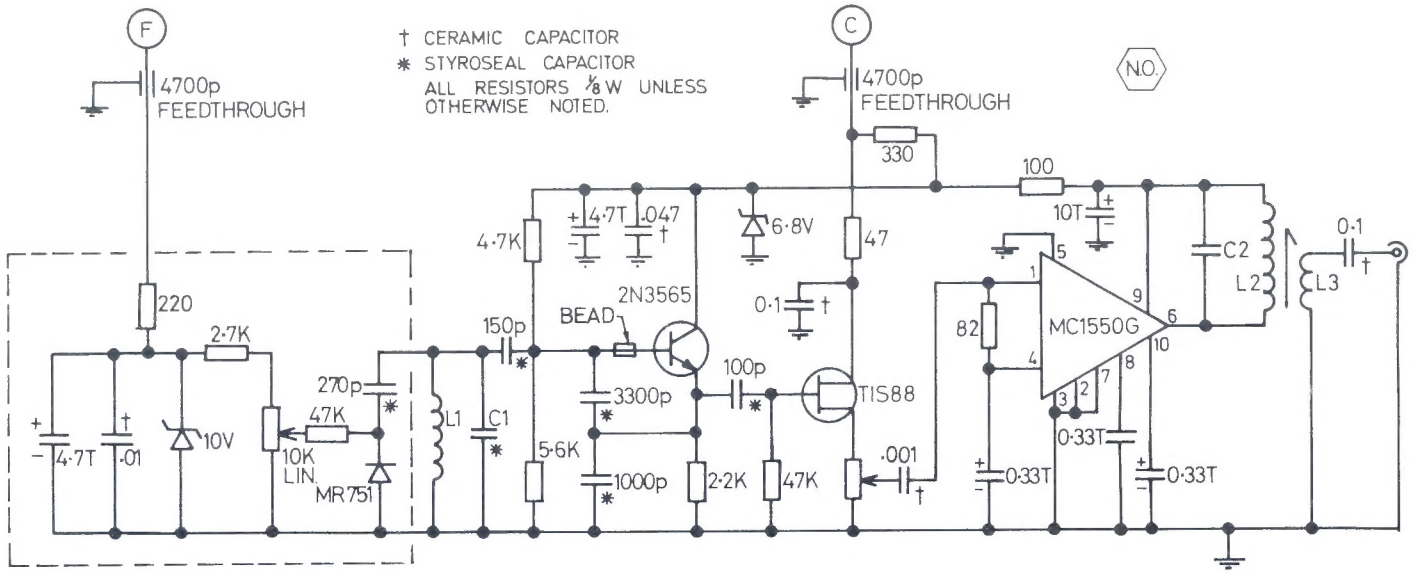
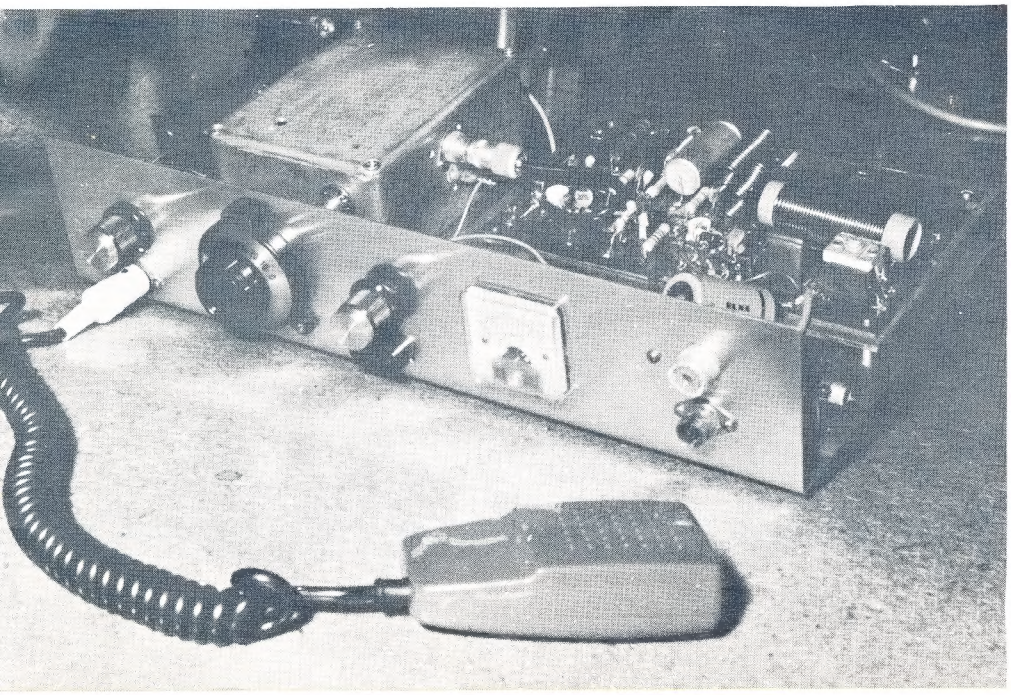


FIGURE 1 – SINGLEBAND TRANSMITTER – VFO



Since silver mica capacitors are no longer stock items in supply houses they were not used in the frequency determining parts of the VFO. Instead, use was made of the freely available *Styroseal* components. They should be used where so indicated in Fig 1. Ceramic disc capacitors should **NOT** be used in place of the styroseals although silver micas could be substituted if on hand.

Keying is effected by interrupting the DC supply to the VFO proper but the supply to the Varicap diode is left on at all times to avoid detuning caused by slightly different turn-on voltages of the zener. Exhaustive tests showed that no *chirp* could be detected when keying the VFO in this manner.

Using the standard Neosid 722-1 0.2" diameter coil form with an F16 slug calls for some 70 - 80 turns of very fine (36 AWG) wire. There are some not inconsiderable difficulties in so doing and an easier way was sought to obtain the relatively large inductances required for 160 metres.

Ultimately the Neosid A1 assembly was chosen since it gives large inductance values for relatively few turns of the wire. The A1 assembly is shown in Fig 4 and can be seen to consist of a plastic former, two mushroom shaped ferrite mouldings, a central former, a tuning slug and a nylon bolt which clamps the whole thing together. Only 24 turns of No 26 AWG are needed to give the necessary inductance and these are scramble wound on the plastic winding former.

Physically, the whole VFO is built on a 3¼" by 4" printed circuit board which, in turn, is mounted on ½" tapped brass stand offs inside an Eddystone 6809 P die-cast box. Component layout is given in Fig 6.

Input DC for the VFO and for the Varicap are brought in through feed-through capacitors. Output is taken via a Belling Lee co-axial socket.

LINEAR AMPLIFIER

Having obtained a *mini* signal, it remains to amplify it to some reasonable output level.

10 to 15 watts of RF — however generated — is quite adequate on 160. Indeed the majority of the transmitters in use around VK3 fall into this category. Whilst there is no reason why the small signal from the exciter could not have been amplified by means of valves, the current availability of the 2N5589-90-91 series of power transistors at very reasonable prices offered a means of power boosting which was relatively cheap and avoided the complication of high voltage supplies for mobile work.

Reference to *AR* for June 1969 will show that these three transistors were used in a Sideband Linear and had proved quite successful. By dropping the band switching used in that instance, but retaining the same general circuitry, a very simple, small, single band linear can be constructed. Fig 2 gives the circuit diagram. The component layout is given in Fig 8.

A resistance coupled 2N5589 is used to drive a 2N5590. In turn, the 2N5590 drives a 2N5591 through a matching network consisting of C3, C4 and L4. The choke in the collector circuit (RFC2) must have an impedence of about five times the collector impedance at the operating frequency and is damped by the 1000 turn 1 watt resistor on which it is wound.

The output circuit of the 2N5591 consists of a series arrangement (L5 C5 C6 C7 C8) and matches the very low collector impedance to a standard 50 ohm output level. The collector is shunt fed via RFC 4 which has a 100 ohm damping resistor across it.

Output *tuning* is by means of C8 — a 20-220 pF ceramic trimmer — and is set for maximum output at mid-band. No other output tuning arrangements are needed after this adjustment has been made.

Variation in output into a 50 ohm dummy load is no greater than plus or minus 1½ watts when the VFO is tuned across the 60 kHz wide 160 metre band. The HT feeds to each stage are individually decoupled with either a resistor or an RFC, the decoupling capacitors in all three cases being an 0.047 mF (Ducon Redcap) ceramic disc in parallel with a 4.7 mF *peardrop* type tantalum capacitor.

In view of the heavy RF circulating currents in the output tank, silver mica capacitors are preferred if to hand. However, in view of the previous comments on availability of these capacitors, a search was made for alternatives and the Ducon Plessy Type LCQ 100 VDCW type were used in the final design.

The Linear is built on a piece of (suitably etched!) circuit board mounted copper side up on a piece of ⅛" aluminium the same size as the PCB to act as a heat sink. Components are soldered directly on to the copper "lands". This method of construction allows the three transistors to be bolted hard on to the aluminium plate for maximum heat transfer.

TABLE 1—Coil and Capacitor Data.

Component	160	80	40
L1	24 turns 26 AWG on Neosid A1 form	12 turns 26 AWG on Neosid A1 form	6 turns 26 AWG on Neosid A1 form
L2-3	As L1 L3 is 6 turn Link	As L1 L3 is 4 turn Link	As L1 L3 is 3 turn Link
L4	50 Turns CW. No 33 AWG on Neosid 722-1 form F16 slug	40 turns CW. No 33 AWG on Neosid 722-1 form with F16 slug	25 turns CW No 33 AWG on Neosid 722-1 form with F16 slug
L5	36 turns close wound. No 16 AWG. wound on ¾" dia. P V C former.	20 turns close wound. No 16 AWG wound on ¾" dia. PVC former	17 turns close wound. No 16 AWG Air core. ½" ID
C1-2	180 pF Styroseal	180 pF Styroseal	180 pF Styroseal
C3-4	470 pF Phillips ceramic	220 pF Phillips ceramic	100 pF Phillips ceramic
C5	1000 pF Ducon LCQ	470 pF Ducon LCQ	220 pF Ducon LCQ
C6	2200 pF Ducon LCQ	2200 pF Ducon LCQ	1000 pF Ducon LCQ
C7	2200 pF Ducon LCQ	20-220 pF ceramic trimmer	20-220 pF ceramic trimmer
RFC1	100K 1 watt ceramic resistor filled with 26 AWG. En. wire	As 160	As 160
RFC2	52 turns 26 AWG wound on 1.0 k 1 watt ceramic body resistor	As 160 52 turns 26 AWG	As 160 but 24 turns 26 AWG
RFC3	24 turns CW 16 AWG. ⅜" I D air core	As 160	As 160
RFC4	16 turns CW 16 AWG. ½ " ID air core	10 turns CW 16 AWG ½" ID.	14 turns CW. 16 AWG. ¼" ID. air core

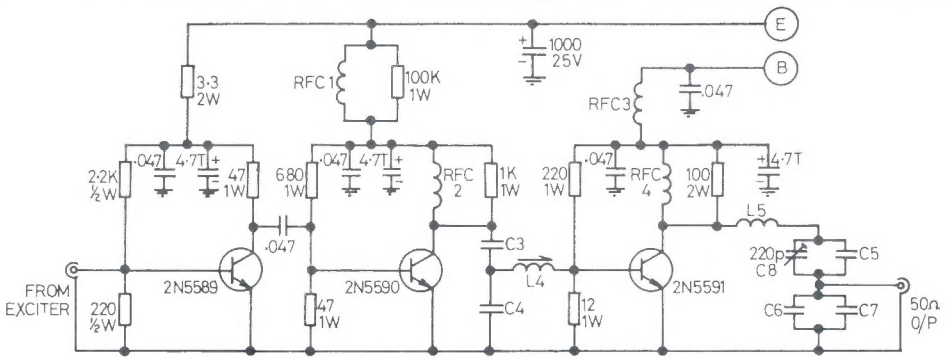


FIGURE 2– SINGLEBAND TRANSMITTER – LINEAR STAGES

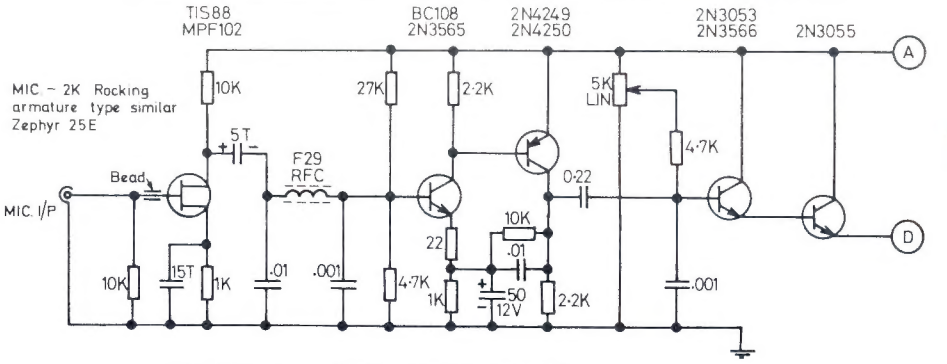


FIGURE 3 – MODULATOR CIRCUIT

THE MODULATOR

The method of modulation used in the present design is essentially series modulation, whereby the RF output level is caused to vary at an audio rate. In many ways it can be compared to the series gate method of modulation popular in valve transmitters. The circuit diagram is given in Fig 3. Component layout is shown in Fig 7.

A microphone pre-amplifier consisting of an MPF102, a 2N3565 and a 2N4250 is used

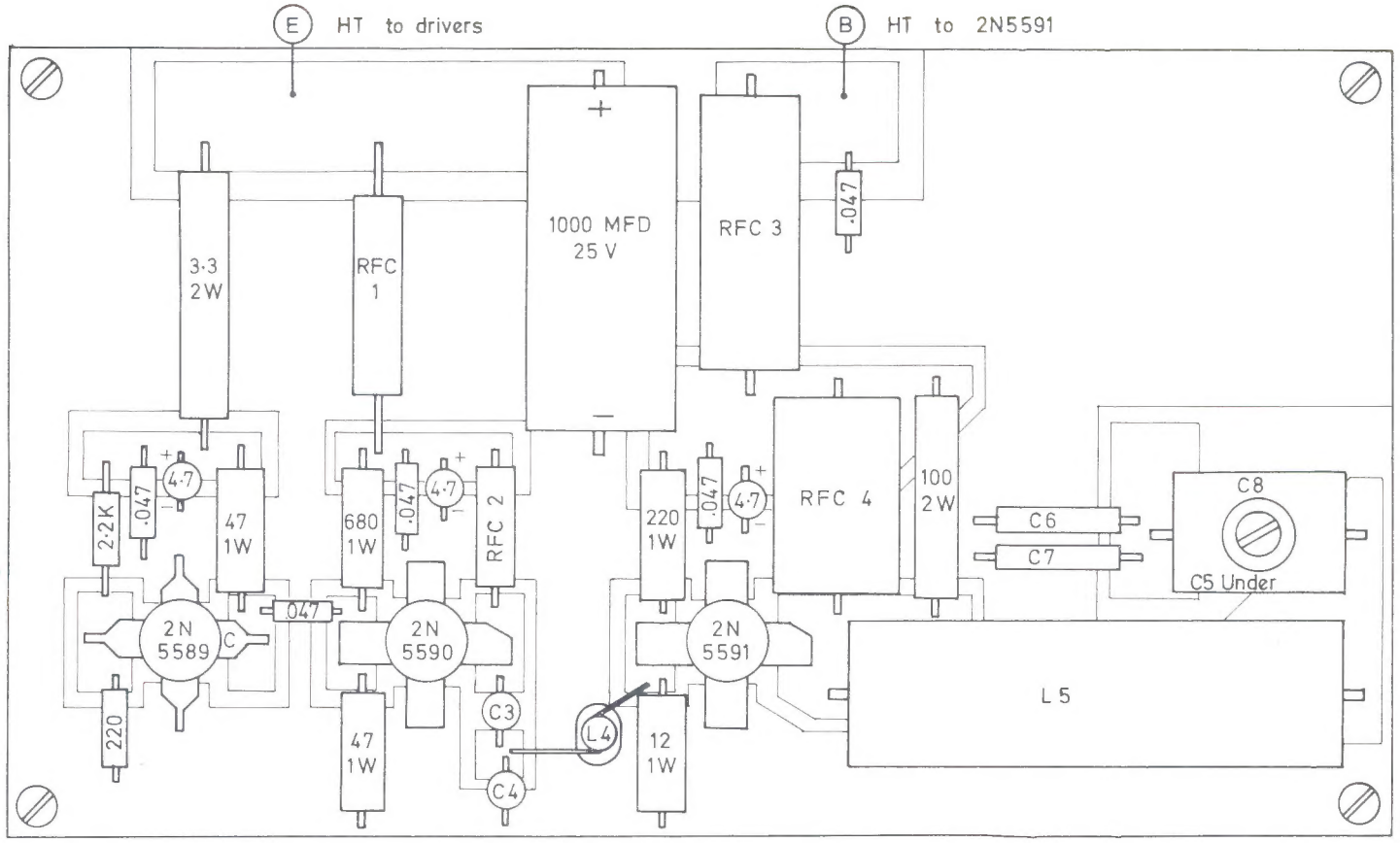
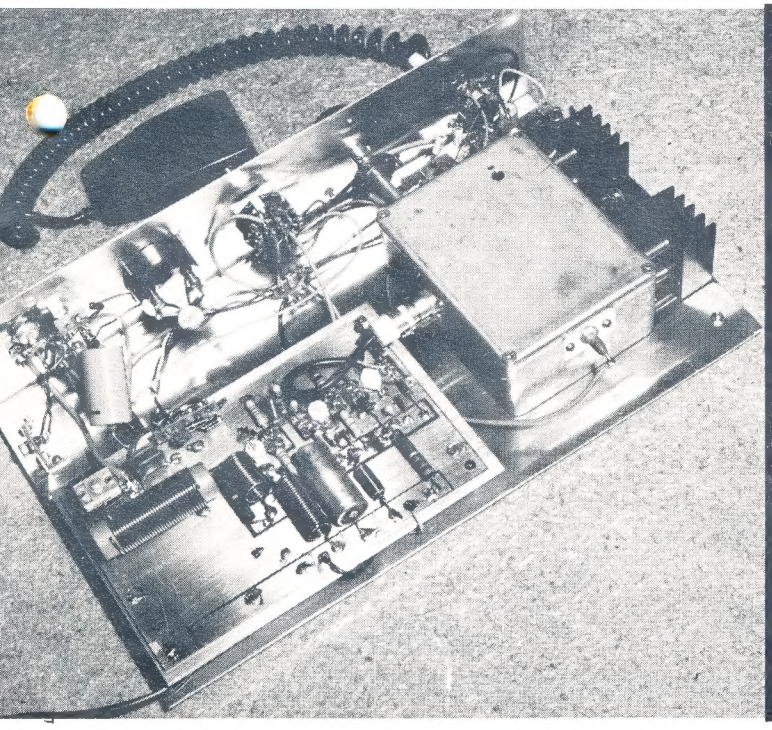


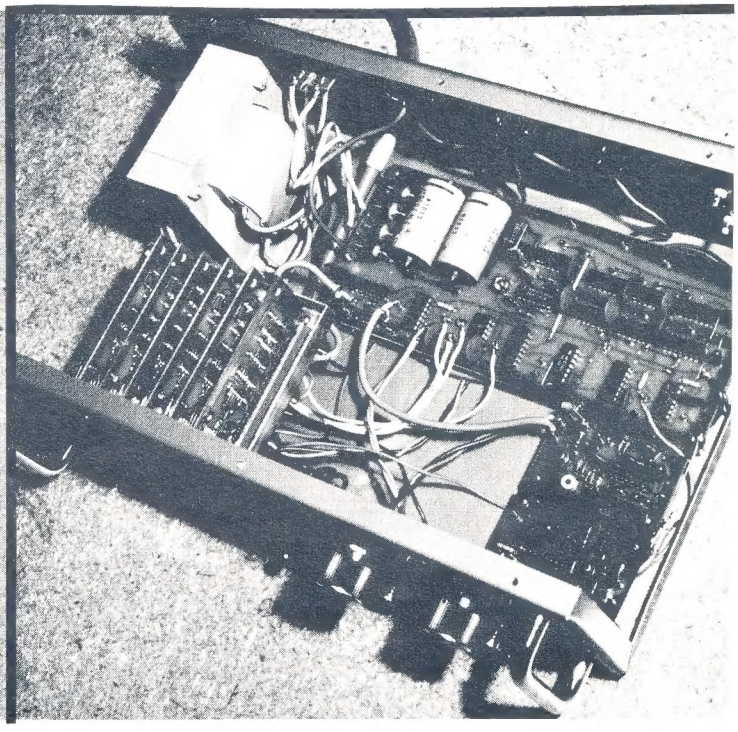
FIGURE 8 – SINGLE BAND TRANSMITTER LINEAR STAGES
P. C. BOARD LAYOUT

N.O.

ABOVE—A top view of the completed transmitter clearly shows the location of all major components. (Photo—VK3ZCK)

BELOW—A photo of "a 30-40 MHz Frequency Counter" described in AR March-April 1973. Kit sets for this unit are available from the VK3 Disposals Committee. (Photo VK3ZCK)





to drive, in turn, a 2N3566 and a 2N3055. HT is *gated* to the PA at an audio rate through the 2N3055.

In this method of modulation, the power output from the PA in the CW mode is reduced to half before applying modulation. This is achieved by means of the 5K linear pot across the supply rails which sets the standing bias on the 2N3566 base.

This method of modulation avoids the dangers of overdrive inherent in the more normal *plate and screen* method and does not have *over 100 per cent* modulation capability. When the effect of even momentary back bias on transistors is contemplated this slight lack of modulating capability can be looked on as an advantage rather than otherwise. Also the problems of splatter caused by over-modulation cannot arise. Finally, but by no means least importantly, there is no need for special modulating transformers.

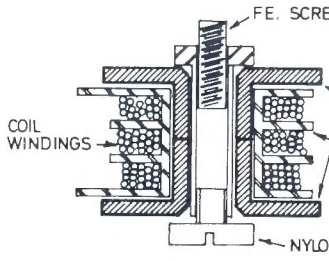
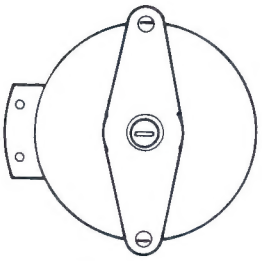


FIGURE 4
L1 & L2/3 COIL ASSEMBLY



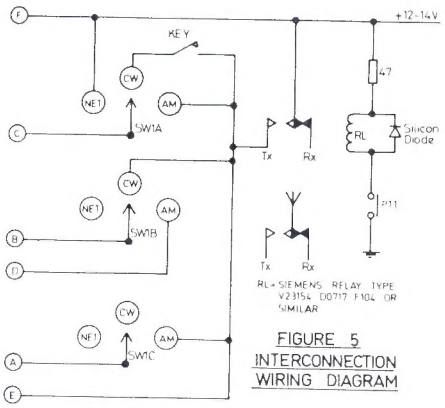


FIGURE 5
INTERCONNECTION WIRING DIAGRAM

CONTROL

Fig 5 gives the necessary control circuitry needed to operate the transmitter.

This is quite straight forward and the only points worth stressing are the 1000 mF 25V electrolytic across the supply and the silicon diode across the relay coil. Both are necessary to prevent damage to the three power transistors.

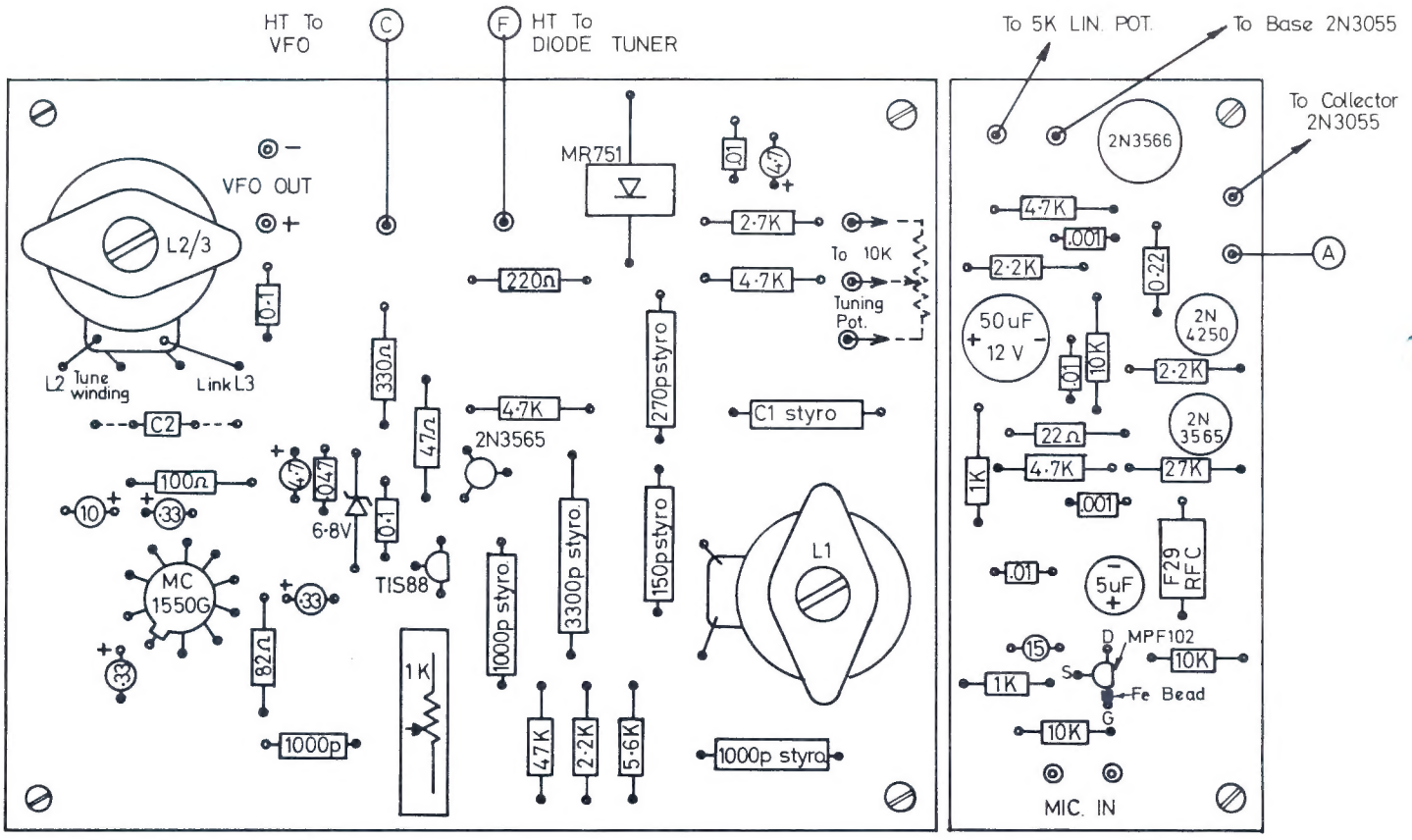
GENERAL

The final form of the complete transmitter is quite uncritical. The writer's prototype is built on a simple L shaped piece of aluminium the base of which is about 12" by 8", the front panel being 3½" high. Placement of parts can be varied to suit the individual constructors requirements.

A simple Japanese direct dial drive is quite adequate for the VFO — indeed anything more elaborate is both unnecessary and over-expensive.

In its various developmental stages the 160 metre version of this transmitter has been shown at the VK3 division of the WIA, the Moorabbin Club and the Western Districts Club in Melbourne. It generated a rather surprising amount of interest and the Moorabbin Club has undertaken to provide circuit boards, kits, etc.

For further information on this aspect, those interested are asked to write to the Secretary, Moorabbin and District Radio Club, 20 Lygon Street, South Caulfield, Victoria, 3162. ●



VFO MODULATOR

FIGURES 6 & 7 — VFO AND MODULATOR P.C.B. LAYOUTS

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a noise gate converter

CLEM MALOOF VK2AMA
7 Harrow Road, Bexley 2207.

At this station, located in an historic Sydney suburb, there has long been a need to suppress pulse pollution radiated principally from auto ignition and power line inductive apparatus. It is hoped the device to be described will go a long way to help the Radio Amateur beat this nuisance.

it is not uncommon at the VK2AMA location to discover that one's transmitted signal is being copied around the world solely from information relayed by intermediaries such as relay stations or cards from SWL's! Many of those who acknowledge one's CQ calls are simply masked out by local pulse noise. The noise pulses are short in duration but high in amplitude compared to the envelope of information on the signal sought.

As the name implies, the Noise Gate Converter is suitable for using with valve type receivers which otherwise possess satisfactory gain, stability and bandwidth considerations for the Amateur Service. Although the circuitry has been chosen to interface with valves, it is basically discrete solid state in nature it is thus also compatible, after modification, for solid state receivers.

All modes of reception will benefit from installation of this Noise Gate. Being untuned, the Noise Gate Converter will upgrade receivers having all the common intermediate frequencies.

There are no adjustments.

The whole unit including power supply, is accommodated on a five centimetre square of "Vero Board". Mounting is below chassis in a vertical position between an IF transformer and its succeeding valve, employing an aluminium bracket, self tapping screws and separate common ground wire.

The power required is 16mA at +12 volts. In my old Drake 2B this was most simply arranged from the standard 6.3 Vac tube filaments but obviously other sources are available.

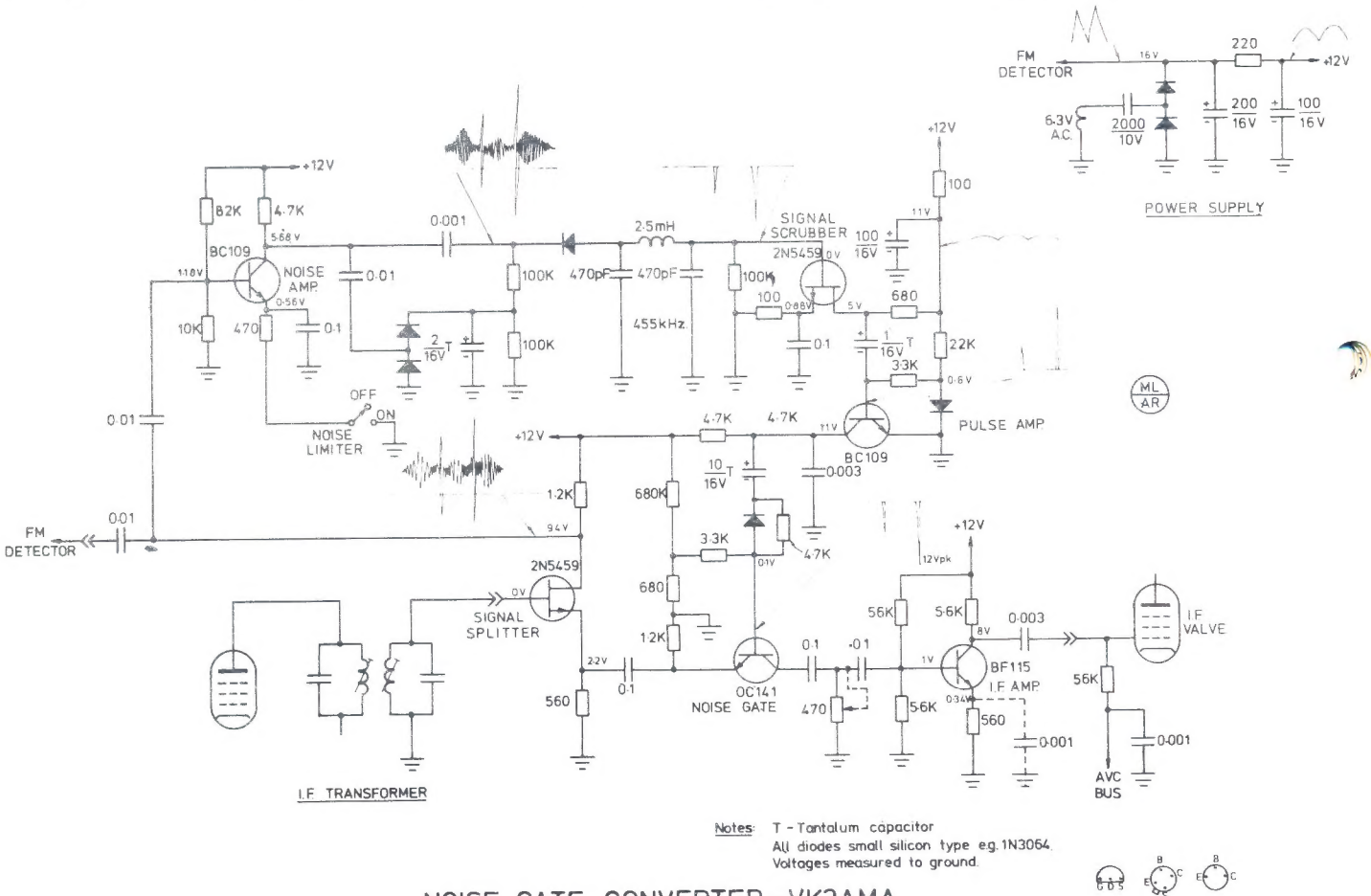
On-Off control is a single pole slide switch already present on the front panel. No threshold control is required as this is automatic over a wide range of IF levels.

If AVC is applied to the selected valve stage, re-routing will be necessary unless the grid is shunt fed. The IF transformer secondary winding should work the signal splitter FET gate against ground. This arrangement avoids detuning and maintains full design Q of the transformer.

Before disturbing the IF channel it is advisable to establish a gain figure which can be confirmed after installation of the Noise Gate Converter. In the case of my 2B it was a simple matter to inject crystal calibrator. On 80 metres the S meter reads 20dB over 9 at maximum sensitivity.

If one wishes to experiment with more or less IF gain, the opportunity is here presented. An emitter bypass on the IF amplifier together with an IF gain contro[l] the form of a tab pot are dotted into the circuit diagram for this purpose. Most commercial equipment will have already been built with optimum gain — anything further may only jeopardise the signal+noise to noise ratio.

Effectiveness of the converter is such that it is left in at all times. It is turned off only to demonstrate its action.



Notes: T - Tantalum capacitor
All diodes small silicon type eg. 1N3064.
Voltages measured to ground.

NOISE GATE CONVERTER - VK2AMA

THE CIRCUIT

The splitter stage divides signal two ways and impedance matches the IF transformer to the converter. From the source, signal amplified somewhat less than unity is capacitively coupled to the noise gate emitter. The base is forward biased and receives gating pulses. Observe the collector is open for direct current, thus preventing hash during gating action as no electron flow is interrupted. Signal from the drain of the splitter stage is about twice IF voltage level. It provides IF injection for my FM detector (AR June 1970) and drives the high gain noise amplifier which is controlled from the front panel. Output feeds the signal scrubbing elements, effectively delivering 'clean' signal-free IF noise pulses. A half-wave doubler automatically back biases the series diode to almost peak envelope voltage over a wide range of IF levels. As signal must pass through this diode, only rectified negative going pulses of higher amplitude than the envelope will reach the gate of the signal crubber FET. The low-pass filter restores pulse envelope shape and ensures RF stability. Its parameters are set in the diagram for 455 kHz. As a rule of thumb they can be varied in inverse proportion for higher IF's. The gain of the signal scrubber FET is less than two but it matches the higher impedance of the scrubbing elements to the lower impedance of the pulse amplifier. Positive going noise pulses are capacitively coupled into this pulse amplifier. The latter is biased to cut-off similar to class C operation. Because of the absence of emitter ballast, temperature stability was obtained by placing a silicon diode in the ground leg of the bias divider. Negative going pulses of the order of the full low tension supply voltage, viz:11.5 volts, are capacitively applied to the base of the noise gate through another diode. This latter diode may not always be necessary but it was observed that extremely high amplitude noise pulses could form small positive pulses at the collector of the pulse amplifier dependent on the discharge time constant of its base coupling capacitor. The series diode guarantees stable operation at all noise levels.

ACKNOWLEDGEMENTS

Acknowledgement is given to William K. Squires (QST October 1963) for describing a certain symmetrical germanium transistor exhibiting very fast switching properties and for the suggestion to incorporate it into a hash-free noise gate. Suitable local equivalents include the OC139, 14Q,141 family, each of which performed successfully in the design presented.

It is noted that some current models of Yaesu equipment employ similar automatic signal scrubbing circuitry.

Finally, most parts for the project were obtained from the Victorian Division WIA Disposals Committee P.O. Box 65 Mt. Waverley 3149 by way of a convenient and expeditious mail order service.

Footnote: An ever present source of noise suitable for evaluating the Noise Gate Converter will be found on 10 metres near any main road! ●

2 KO Newcastle

The Hon. Sir Allen Fairhall, K.B.E.
VK2KB, 7 Parkway Avenue,
Newcastle,
NSW 2300.

For reasons which will become clear I was more than interested in "Fifty Golden Years of Broadcasting" by Maxwell Hull in the Ausust issue of Amateur Radio. It is a national misfortune that the history of Broadcasting in Australia was not written, while so many of the people who made such rich contribution to it, were still around to tell their tale. But that is another story. Perhaps I can add a paragraph or two to Max Hull's story which is illustrative of the times of which he writes.

I had built my first working receiver in 1924 when there was little official broadcasting but with Amateurs providing a good deal of rough (!) interest.

When serving an apprenticeship to Electrical Fitting in the years 1925 on I met fellows who actually knew the Amateur Broadcasters including 2CS, 2 MS and some others! Then the bug really bit me and I became A2KB in 1927 complete with a UX201A in T P T G, Slop Jar rectifier and an OV1 receiver. "Young Squirts" please note!

My interest also led me to build an Electric Gramophone with a pair of UX250's with all of ten watts output!

The great Depression hit the bottom of its curve coincident with the end of my apprenticeship in 1929 and I was looking for a non-existing job for quite a while, meantime filling in the rest of the day on 40 metres.

Those were the happy days when Amateur's could still romp on the 240 Metre (Publicity) Band. It occurred to me that a little publicity might drum up a little work in Radio Servicing.

So Sunday mornings found tank coils switched to 240, the gramophone tied in as a modulator and 2KB became a regular Sunday Morning Broadcaster to the great content of Listeners charmed by faithful rendition of such records as I was able to borrow. Some of it was even very good, since I was ignorant of little things like copyright and played one or two well known works over the air which were banned to every other Broadcaster!

Then out of the blue some hopeful business man asked me to do some advertising. Sadly I refused. But a great light dawned and with hand shaking with eager anticipation I wrote the Chief Radio Inspector and had the temerity to ask for a "B" Class Licence.

Twelve months went by while I floated a Company, argued myself into the support of local organisations, brought forward the evidence of an already appreciative audience and waited. Then one day the Licence turned up!

However, I soon learned that having a Licence was one thing. Knowing what to do with it was quite something else, since money was now needed in what were considerable quantities for the hard times we were enjoying.

I never knew that business men were so cagey about a bit of cash — or maybe they were broke too — or did not have any confidence in the obviously inexperienced character who was trying to sell them a hot idea.

Raising money for Broadcasting Stations has come a long way since 1931 but the answer then was a good round lemon. After another six months of that state of affairs the Radio Inspector was once again breathing down my neck, this time muttering, "Use it or send it back".

But I was not going to give in that easily.

I bought another length of 2" x 2" oregan and put another 20' on the rear mast to make 40'. Now I turned my UX210 TPTG into a Power Amplifier with crystal control, bought a microphone on the "pay if ever I can basis" and 2KO Newcastle was in business.

Happily in the 240 metre days I had met a young musically inclined character by name Pic' hover, who knew where there were stacks of gramophone records for the borrowing. He became Chief Announcer and between us we managed to do a reasonably professional job as engineers, copywriters, announcers, salesmen, accountants and anything else that had to be done about a Broadcasting Station.

The performance seemed to be acceptable to the Radio Inspector who blinked a little at the general layout, but gave a somewhat reluctant blessing to the use of 6 watts in a suburban back yard on a temporary basis.

Now our 9 AM Sunday morning romp became a fixed 1 hour programme after which the station closed until 7 PM!

There was however one snag. The Trawlers fishing the NSW Coast at the time used 240 metre CW to check fish prices to see whether it was worth bringing the catch in. They mostly managed to choose 9 AM on Sunday morning and since their signals were mostly RST592 the QRM was killing the audience!

It became routine opening drill on Sunday morning to key the rig and tell the Trawlers to get to hell off my frequency to let us get on with the business of entertaining the populace. This is the only case to my knowledge of a Commercial Broadcasting Station sending CW.

For the record it is interesting to note that the Log Book, of which I retain proud possession, shows the revenue for the first month coming from two Commercial Announcements at 4 shillings each!

But that is the story of how one Amateur got into Broadcasting in the good old days.

Ultimately I had the pleasure of inviting into the service fellows like 2KG, 2MS, 2ZC, 2AHA and one or two others who have since left town and whose calls escape me.

Most of them are either still there or have left the service of the station for honorable retirement.

2KO Newcastle therefore became perhaps one of the more concentrated examples of the contribution Amateur Operators made to Commercial Broadcasting — and happily vice-versa! ●

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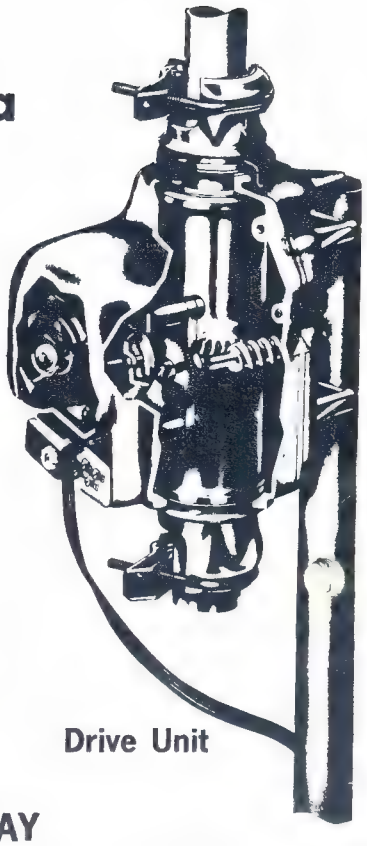
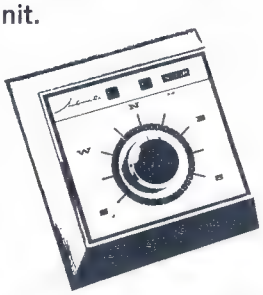


Drive Unit



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las balsas (part 2)

S. E. Molen VK2SG

The Australian Communications Co-ordinator
13 Pendle Way, Pendle Hill, 2145.

While His Highness the Duke of Edinburgh was in contact with the rafts they were in the position of 166 degrees 00" east and 24 degrees 15" south and had travelled 61 miles for the last day, making a total distance travelled of 7888 miles. This put them due south of New Caledonia, and as I said previously it was raining and the winds were 15 to 18 knots. The next sked was on the 26th November, and the rafts were still making good progress. At this time we were getting a little worried that the rafts would be in Australia before we could get up to Mooloolaba for we had arranged our holidays to coincide with the anticipated arrival of the rafts.

As they were getting closer to the Australian coast it was decided to have the skeds every two days instead of the previous four days. The sked of the 1st November was more or less normal, apart from the fact that during the morning I had packed my campmobile with the necessary clothes, food etc. that one normally takes on holidays, together with an FT200 with both AC and DC-DC power supply, a 30L1 linear amplifier, a foldup two element Yagi beam, a 25 foot collapsible mast together with baseplate and guys coax cable, and most of the things that one needs to operate a portable station. After the sked which finished at 1600 hrs. local time we said goodbye to the six visitors, both local and overseas, that we had had for lunch and headed for Mooloolaba where we arrived 14 hours later.

Having found a place to set up the gear, at the home of Dr Win Fowles, we proceeded to erect the station and check it out, glancing every now and then out to sea to make sure that the rafts were not appearing over the horizon. About 1300 hrs the station was tested out with several contacts and, strange as it may seem, it all worked and we were ready for the next days sked. The next day we had the sked as usual, only to find that the rafts had slowed down and had only done 60 miles in the two days, making a total of 8260 miles. On the sked of the 3rd November it was decided that as 4LZ had arrived at Mooloolaba and could take over the operation for a few days, it would be possible to go out to the rafts and take them some fresh fruit and vegetables.

They were at that time about 420 miles from the coast, the seas were smooth and the winds were light. A hurried trip around the shops, with our minds in a turmoil trying to think what the chaps would appreciate after more than 150 days at sea, and trying to organise a boat to take us out, one that had sufficient range to get us there and back.

We finally left early in the morning, well loaded with all kinds of goodies, and of course some Beer. We travelled for a long time and over lots of ocean, until the sked of the 5th when we found that the rafts had hardly moved. In fact they had only travelled 9 (nine) miles in the past two days and they were just sitting there with no wind and very little movement in the water. For some people on the boat this was a happy thought, because most of them, being landlubbers, were leaning over the side of the vessel talking to "Herbie". At this point I asked Vital for a sked at 1930 hrs. local time so that I may get a fix on him and we would not have to spend the night looking around the ocean trying to find him. At 1930 hrs. there was Vital with a big signal. After I stopped him singing I was able to get a good bearing on him, slightly off the starboard bow, but as I was only using a whip aerial to get a bearing, I was not sure whether he was ahead of us or behind, so I asked for another sked at 2000 hours.

Again Vital was there and I took another bearing and sure enough he had moved slightly more to the starboard, which meant that he was ahead of us and that we were slightly north of him. We changed course by 11 degrees to put him right on the bow, and steamed on. We kept up a continuous chatter for a while, and at 2057 hrs. there appeared on the Radar three small blips at 4.6 miles. Sure enough there were the rafts right on the nose. We came alongside them at 2130 hrs. and were they pleased to see us.

I guess at this point I had better digress and explain this direction finding with a whip aerial. I know the thought has occurred to someone that a whip radiates equally poorly in all directions. Basically this is so, except for one direction, and in this direction it radiates very badly, and that is from the top. In effect if you take a vertical and rotate it into a horizontal plane you will find that the ends are very dead, and the end away from the coax is the really dead end. So if you are looking for a station you just take your vertical into a horizontal plane by holding the coax end, without touching the coax center or the actual aerial, and point it. You will find a null of signal in the direction from which that signal is coming, with the possibility that it may be coming from 180 degrees, hence the second sked to prove that the station was moving towards us from the bow, and not passing us from the stern; a little crude maybe, but effective.

So there were the rafts, but unfortunately it was night and we could not transfer food to them at that time, and as we had a film crew with us and they wanted to film the procedure, we waited until daylight. Possibly some of you saw the film on the news services.

We stayed with the rafts until about midday when we reluctantly turned back to the Australian coast about 400 miles away. We wished we could have towed them those last few miles, but we realised that this should not be. If we had known what was to happen later maybe we would have given them a little push in the right direction. In the next two days they travelled 30 miles, mainly in the wrong direction, for they were getting fairly close and they were too far south for what we felt was a good position to arrive at their destination of Mooloolaba. But there was nothing that they could do as they were totally dependent on the winds, and there was no wind.

Between the 7th and the 9th they started to move again and in these two days they did 88 miles and in the right direction. We were feeling better and a little happier, but it was short lived, for on the 11th, even though they had travelled 59 miles for the two days, they were again going south, and so it went on until the 14th November when their position was 155 degrees 57" east and 26 degrees 23" south, which put them about 120 miles off the coast and about due east of Mooloolaba.

This would appear to be a good position to be in, but there was a fast flowing current down the coast which they would have to cross, and it was felt that they would have no possibility of doing this from their present position. It was at this point that Vital was told that unless he made more than 25 miles north before the next day, we would come out and tow him in because he could get into serious trouble with the southerly set in the current, which the locals knew could flow at up to 6 (six) knots. This current incidently is one of the fastest flowing sea currents in the world.

I forgot to mention that while we were out at sea a visitor arrived at the control point unannounced and unsung. The story of his introduction to VK2SG-P operated by VK4LZ I will leave to Les to tell you. The people concerned are still blushing because the visitor was Admiral Don Samuel Fernandez (ret.), Navigation instructor to the Mexican Navy, and the person who taught Vital and his crew to navigate and who assisted greatly in the organisation of the trip. At home he operates under the callsign of XE1EB. Have you ever tried to convince someone that you are not a newspaper reporter in a language that you are not really conversant with. Anyway, ask Les some time to tell you, that is if he can stop laughing.

But Samuel is a real gentleman and he took it all in good part when it was explained to him and he is still smiling about it. During this time, or really from the time before we went out to the rafts, radio conditions played us dirty. Mexico and South America had virtually disappeared, and as the rafts were starting to get inside our first hop we were having trouble with copy. But as VK4GD was our northern backup from Townsville he became more and more important to us as he was hearing the rafts just like locals and also he was hearing us and we were also receiving him at good strength.

He was taking over the skeds and repeating the figures back to us. Len spent many weary hours just sitting at his set helping out, and at times when we were a little down in the dumps, his infectious laugh brightened us all up. After we had threatened Vital with a tow unless he could make better than 25 miles north, Vital showed his spirit and went north 44 miles, with the help of favourable winds, so for the moment we were satisfied, and all he needed was some more of

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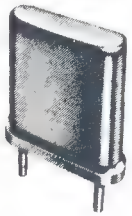

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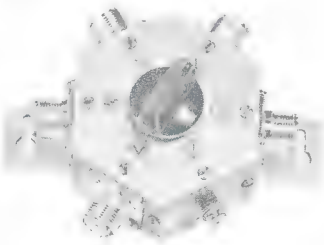

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the favourable winds for another day or two and he would be in a perfect position to turn southwest and come straight into Mooloolaba. To make sure that he maintained his northerly progress we arranged another sked for the next day, and sure enough Vital had made a further 22 miles north, but unfortunately the wind had turned to the east and he had headed about 42 miles west, this brought him to within 48 miles of the coast and 94 miles north east of Mooloolaba.

At this point we felt that he was too far from the coast and too close to Mooloolaba to be in a safe position. We would have preferred him to be further north and nearer the coast to dodge the southerly current, but the position he was in could be tolerated if the winds strengthened a little and helped him across the current. In any case, to be sure, we arranged a sked for the next morning at 1100 hrs. At the sked time when we received his position, we realised that what we had feared had happened; during the night he had come 61 miles south.

With no assistance from any wind Vital and the other rafts were fast drifting south in the grip of the current. After a discussion with Samuel Fernandez (XE1EB) it was decided that the position was such that if we did not arrange a tow immediately, there was a great possibility that the rafts would miss Australia completely and possibly drift back to South America.

The Navy in Brisbane was informed of the position and immediately offered their assistance. There was some delay due to the fact that the crew of the rescue vessel had just returned from exercises around the New Guinea coast, and were on leave. But I doubt if this delay materially altered the situation to any great extent. While we were waiting for the navy vessel Labuan to catch up with the rafts, the rafts established a record days run for the whole trip. A distance of 91 miles was travelled in one day, with no wind assistance. At 1100 hrs. on 19th November the rafts were sighted by a Canberra aircraft from Amberley just south of Point Lookout. This was 24 hours after we had asked for assistance. I am not making that statement as a criticism of the length of time taken for the rafts to be sighted but just as a statement of fact.

The Canberra aircraft was in contact with HMAS Labuan, and could be heard passing his information as he was operating on the same frequency as the net had been operating, namely 14105kHz. As the Labuan was also operating on that frequency under the callsign of VKDY while the aircraft was using the callsign of VMPM, it made it a nice tidy net, with everyone knowing what was going on. Vital on the raft could also hear the conservation, and so he was kept informed of the exact situation. The Labuan made contact with the rafts at 1826 hrs. on 19th November when their position was 153 degrees 54" east and 27 degrees 55" south, or about half way along Stradbroke Island and a little north of Point Danger.

At this point in a discussion with the Navy in Brisbane and with the captain of the "Labuan", Lt. Old, it was requested that if possible the rafts be towed back to Mooloolaba as a lot of organisation had gone on there to welcome the crews of the rafts.

In a later contact with Lt. Old it was learned that the Labuan was towing the three rafts north at four knots but, owing to the current, the whole tow was proceeding south at one and a half knots. This was an impossible position, and left two choices. One was to tow the rafts back out to sea about 100 miles so that they cleared the current then tow them north about 100 miles and approach Mooloolaba from the north from about 80 miles. But as they were only towing at four knots, which was as much as the rafts could stand, you can see that it would have run into about a 70 hour tow, providing the weather remained calm, which it threatened not to do.

The other alternative was to tow the rafts to the nearest port of safety, which was chosen to be Ballina. The second choice was agreed upon and the tow was turned in that direction. This left me in the position of being in Mooloolaba and the center of operations being transferred to the Ballina area.

Luckily we had a stalwart person sitting on the frequency in that area, who had not said much at any time, but who we knew was willing to help if needed. At this time he was needed and he did help. Fred Carruthers VK2PF suddenly found himself to be the control station for the network. He did an excellent job. Being well known in the area he was able to put his finger on all the correct people to get things done. But I will let Fred tell you about his side of the operation, for while he was in control I was packing my gear and proceeding south to Ballina at a rate of knots. Here is what Fred had to say.

On the evening of 19th November 1973 the three rafts of Las Balsas expedition were taken in tow by the Naval Landing Craft "Labuan". During the night, the third raft in the tow, captained by Vital Alzar, broke loose and the "Labuan" continued with the remaining two rafts.

Shortly before 0700 hours EAST I switched on the equipment at VK2PF and heard a discussion between VKDY (the "Labuan") and Syd VK2SG portable at Mooloolaba where the rafts had intended to end their drift. I found that they had been becalmed and were in a four knot current being swept South when taken in tow. At the time I first heard the contact they were 13 miles due east of Ballina heading for that Port.

I called in and offered my services if required, whereupon VK2SG transferred control to me, telling "Labuan" that I would take over.

When communications had been established "Labuan" asked me, at exactly 0800 hrs. to arrange for some local vessels from Ballina to take over the tow of the two rafts from him, setting him free to go to the aid of Vital in the third raft. I immediately rang the Ballina Police and requested the necessary assistance. The information passed was as follows:- "13 miles due East of Ballina, raft dimensions 46 feet by 18 feet, weight approximately 22 tons each, low in water, heavily water-logged, 4 knots Southerly drift, rate of tow 4 knots."

Forty minutes after the "Labuan" requested assistance I was advised by the operator at the Fishermen's Co-op at Ballina that three trawlers were then casting off. This was a remarkable performance in view of the fact that the men had come in from sea that morning and were in bed asleep. They had to be alerted, the ships had to be fuelled and made ready for sea, and the message had to be relayed from "Labuan" to VK2PF, phone to Ballina police, phone from police to Fishermen's Co-op and then the crews rounded up. For this to be achieved in forty minutes was a remarkable performance.

At 0828 I informed "Labuan" that the boats would be leaving at 0845.

At 0914 the raft requested consideration being given to tow to Byron Bay. I contacted "Labuan" and the raft and informed them that Ballina was a safe all weather port, whereas Byron Bay was an open Port and not good for all weather and without the necessary facilities. It was then decided that the original plan of towing to Ballina be carried out. At that stage it was tentatively arranged that the first two rafts be held off Ballina until the third raft was brought up and they would all enter together, but this was later abandoned.

At 1017 VKDY reported to me that the fishing boats were taking over at a distance of 8 miles from Ballina, and estimated Time of Arrival in port would be about mid-afternoon. At 1043 VKDY reported the trawl taken over and asked the third raft for a report of position. At this stage it appeared that skip distance would affect my communication with VKDY and VK4GD relayed for a short while. However conditions improved and shortly I was able to carry on direct. VK3OL also stood by in case of necessity.

At 1252 it was established that the raft was 10 miles south of "Labuan" which altered course to make a pick up. At 1317 I passed a message through VK4GD to VK2SG mobile on his way to Ballina telling him of the arrangements made for setting up his station on his arrival.

At 1505 I received a Special Weather report which I passed on to "Labuan" and the fishermen which read as follows "Strong wind warning issued. 20-30 knot southerly change extending north from Moruya preceded by 20 30 knot N.W. winds near Coff's Harbour. Local squalls 40-50 knots with isolated thunderstorms and change. Seas rising to moderate and rough seawards." At this stage it was decided to bring the first two rafts into the estuary at Ballina and give them a midstream anchorage to await the third.

Also at this stage "Labuan" reported to me that the third raft was in tow and the crew and their belongings had been transhipped to "Labuan".

At 1709 "Labuan" reported that the tow was at four knots and that they did not expect to make port until early morning on 21st November 1973.

At 1721 I handed over control to VK2SG and thankfully closed station.

During the morning I was greatly assisted by my wife who handled telephone calls which were very numerous, and kept me nourished. Telephone calls came in from Melbourne, Sydney and Brisbane, and numerous local calls were received from various pressmen, police and others.

The operation would have been much more difficult without the extraordinary co-operation of other amateurs, the fishermen, the police and many other people in the area.

After arriving at Ballina I contacted the police and several other people that I had been informed about on my way down. I still had my mobile running, and then proceeded to re-erect the station, at Fred's request, and get back on the air. The setting up of the station and two element yagi took 45 minutes. I was starting to get more practice. Incidentally I knew this gear very well, for it belongs to Harrold VK2AAH, and it is the same FT200-30L1-2 element Yagi combination that we have used successfully on many field days, and had won many field day contests with. But never before had we managed to get it erected in 45 minutes. It just shows what practice can do for you.

After establishing contact with Fred, he immediately handed the whole thing back to me (totally unfair I thought for I was very dry by this time and the pub was just across the road and I did not have time to go for a thirst quencher). Len 4GD was also on frequency and between us we tried to raise the "Labuan", which was by this time somewhere south and east of us. After several unsuccessful attempts, the Navy in Brisbane was contacted and we were informed that the third raft had been abandoned due to the fact that the tow rope (a 3 inch manilla) had broken three times and the seas were getting rough. It was impossible to launch the "Labuan's" small boat and a further tow rope could not be attached. In no way helping was the fact that the Labuan was rolling 52 degrees and the winds had risen to 20 knots.

The "Labuan" had towed two of the rafts in towards Ballina, where the tow was taken over by three trawlers from Ballina. The "Labuan" then turned around to the third raft which had broken free previously. The irony of the whole thing was that it was Vital's raft the Guyaquil that was causing all the trouble with the tow ropes. It almost appeared as though the Guyaquil did not want to come into port by any other means than under its own steam. Before it was finally abandoned most of the valuable equipment was taken off and very little was left on the raft. This raft is to the best of my knowledge still afloat and could be heading back to the land of its birth, Ecuador.

When the crew arrived at Ballina they were very tired and very hungry. They certainly gave the steak and icecream a good workover, not having seen either for well over five months. When they stepped ashore from HMAS "Labuan" they were given a tremendous welcome from the people of Ballina, and of course having met Vital, Marc and Gabriel on their previous trip, we fell upon each other like long lost brothers.

One thing that Vital did that I will never forget, was when he came ashore with his crews. He came up to me and said, *Syd we have a little present for you, for all the work you have done for us.* He then presented me with the FT101 that they had used all the way across the ocean. Also all the crews had signed the case of the transceiver. Vital said as he presented it, *So many times you break my speaker with your big, big signal this time you fix the speaker yourself.* It is now one of my prized possessions and I have carefully sprayed the case with clear lacquer so that the names will never rub off.

Since I arrived home I have tested it out, and apart from the final tubes being a little low in emission, there does not appear to be any faults in the gear at all. The thing that amazed me was the complete lack of salt corrosion anywhere in the set. None of the circuit boards appear to be effected by the long period in the moist salt conditions, all the switches work, and on a quick test, it appears to give good drive on all bands from 160 to 10 metres. I guess that one cannot ask for more than that. To say the least it is the greatest honour I have ever had to assist Vital and his crews, and to receive this further gift of their transceiver left me speechless.

I do not want to hurt anyone's feelings by failing to mention them for helping in this operation, but my log is just full of callsigns of people who did help. There were some who only helped when they had time, and there were others who came to the fore whenever they were needed, and who must have spent many hours just listening and feeling a little on the outside. Then again there were others from whom we never heard, but who were willing to assist if needed. There were some stations who we could always count upon to be on frequency. People like VK3LC and VK3OL and VK4YE to mention just a few. The others have not been forgotten, but the list would take a long time to complete.

To those who did assist, and to those who listened, please accept the sincere thanks from Vital Alzar and the other eleven crew members of the rafts Guyaquil, Aztlan and Mooloolaba. Without your assistance the expedition could not have been the success that it was. On my own behalf and on behalf of Amateur radio I wish to thank those who stayed clear of the frequency and did not cause interference, and those who guarded the frequency and kept it clear.

To the others who caused deliberate interference, because of some peculiar quirk of their nature, may I say that I am sorry that two of you lost your licence because of this expedition, and hope that you both may be able to return to the Amateur fold in the near future much wiser and more learned gentlemen.

Finally I want to finish with the thought that but for amateur radio such expeditions are doomed to failure communications wise; once again amateur radio has proved its flexibility and its forcefulness in the field of communications. To quote the radio officer of HMAS "Labuan", *I have operated under many different types of control systems, but never before have I run into an organisation so efficient or so quick to get things done as happened on this trip. I was delighted at the procedure, quick response and complete understanding between stations; it made our job so much easier and resulted in a much quicker recovery of the rafts than would have been possible under most other methods of control.*

Distance travelled 9213 miles, the longest recorded drift by man.
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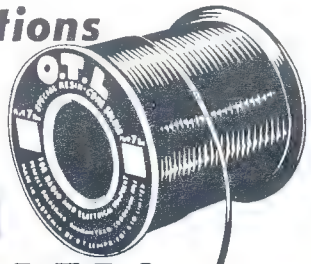

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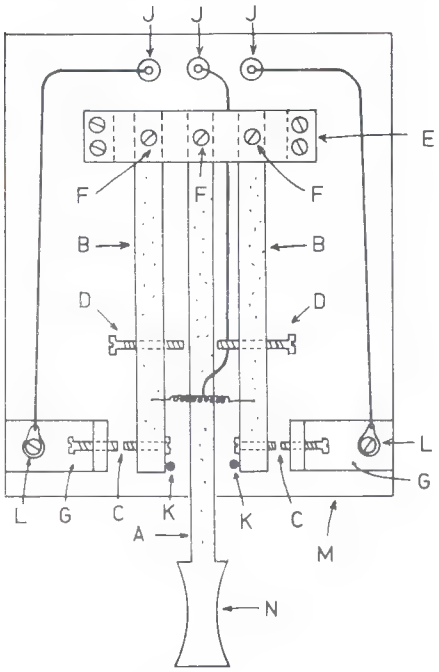
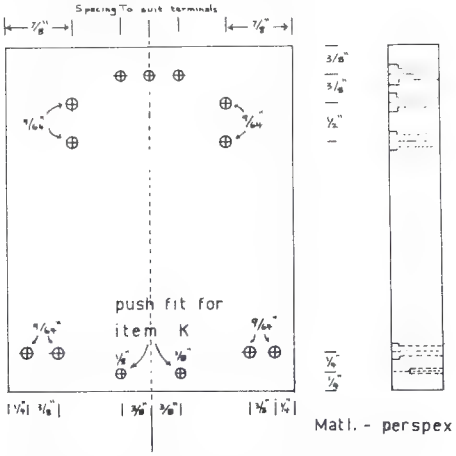
If you are a CW operator you will appreciate the merits of this device which is an original idea as far as I know. The drawings, Figs 1 to 9 should provide sufficient detail to anyone interested in building it up; however a few words about the operation and construction may help.



Plan view

FIG. 1. ACTUATOR FOR ELECTRONIC KEYERS



Matl. - perspex

FIGURE 2. DETAILS OF M - BASE

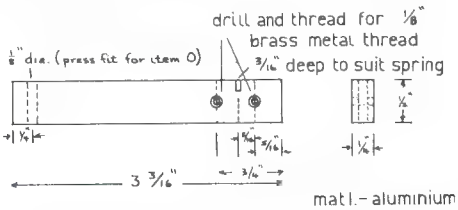


FIG. 3. DETAIL OF B - 'DIT' AND 'DAH' BEAMS

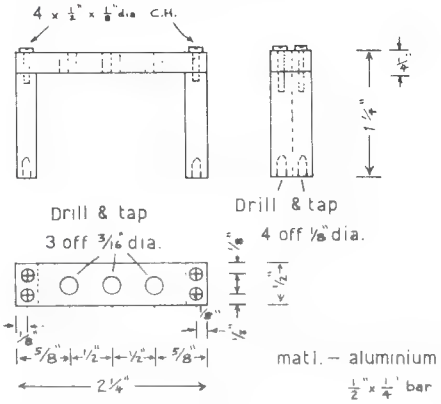
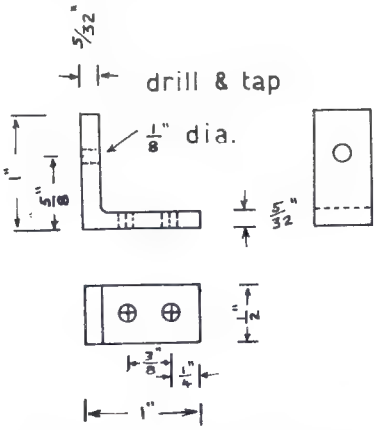


FIG. 4. DETAIL OF E - REAR SUPPORT BRACKET

The actuator consists of three movable beams mounted on a heavy insulating base. Pressure to the left or right on the central paddle beam causes it to strike the differential adjuster screw D. This forces the outer "dit" or "dah" beam to move out and close the contacts C. The opposite beam remains stationary as it is held by the spring H against the steel pin K which acts as a mechanical stop. This spring may be obtained from a worn out ballpoint pen. It is fitted tightly into holes in the top of the outer beams. Sufficient of the ends of the spring is straightened so that it clears the paddle beam when fitted.



Matl. - Al. extruded angle

FIG.5. G - CONTACT BRACKETS

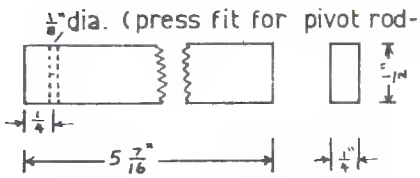


FIG. 6. A - PADDLE BEAM

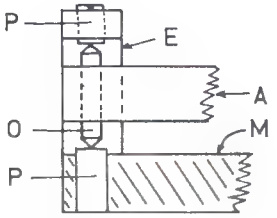
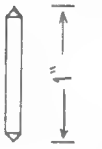


FIG. 7. Section through pivot mounting of beams



Steel rod ⅛" dia.

3 required.

FIG. 8. O - pivot rods

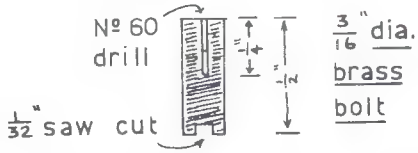


FIG. 9. P - PIVOT BEARING

Terminals are fitted at the rear of the base and wires run from these to soldered connections on the contact brackets G and the tension spring. The pivots F are made from ⅛" steel rod. To form the ends place the rod in a drill and file the point while the drill is spinning. The pivot bearings are made from 3-16" diameter brass bolts cut to length. A hole about 1-64" diameter is drilled through the centre for ¼" and a hacksaw cut made to provide a screwdriver slot at the other end. The contacts C can be made from ⅛" brass metal threads. The ends should be dressed with a file. As they only interrupt a small current they are not self cleaning and should be given a rub with a clean cloth occasionally.

All screws should be given a drop of coil dope to hold them after their correct position has been found. Rubber grommets may be glued to the base of the keyer to act as feet if desired.

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Bob Broughton VK3ZKO/T
9/38 Wattletree Road, Armadale Vic. 3143

The circuit below is something that should be handy for those operators on 2 metres who call CQ with the volume turned down. It provides a visible indication of a signal strong enough to operate the mute.

The unit was designed around the 2 metre carphone circuit that appeared in this magazine about two years ago. Except for the light-emitting diode, it uses readily available components. The LED is available from Radio Parts for about 50c.

Operation of the circuit is extremely simple. Q1 is a DC amplifier to boost the input to a suitable range to operate the Schmitt trigger formed by Q2 and Q3. That's it! When the input level is sufficient to operate the Schmitt trigger, the diode lights.

Construction is also very simple. I built mine on a piece of Vero board (complete with LED) and mounted it behind the front panel of the rig, with the LED poking through a hole in the panel. However the unit can be placed remote from the rig (for example behind the speedo in your car) but it would be a good idea to bypass the input at the unit to prevent RF getting in and causing false triggering. Apart from this, there are no construction problems.

A LED was used in the prototype mainly because it should (theoretically) outlast the case it is mounted in. Also I got a handful cheap! A 3V incandescent lamp could be used quite successfully by those who prefer.

To connect the display into the carphone circuit, take a look at Fig 2. The input to the display is taken from a tap across the noise rectifier. This can be done quite simply on the prefabricated circuit boards by drilling a small hole through the copper conductor between the AN2001 and the 150K ohm resistor and soldering in a wiring post. Shielded microphone cable should be used between this point and the display unit if it has to be run any distance.

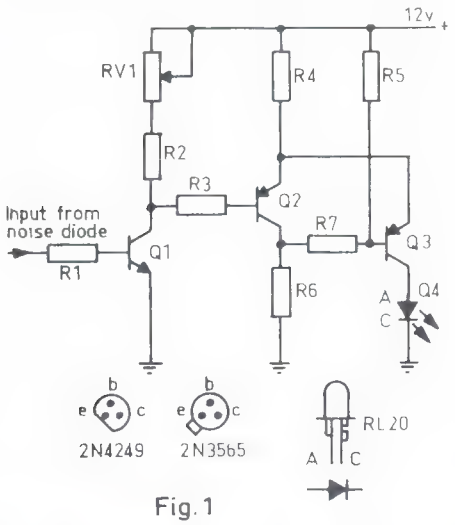


Fig. 1

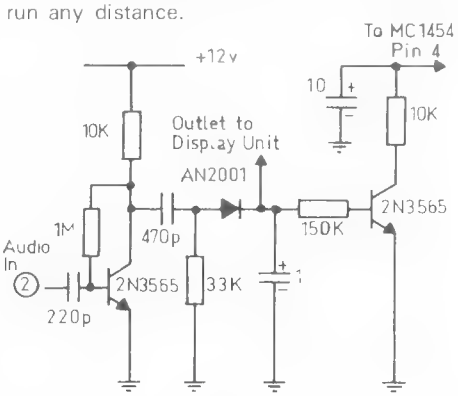


Fig. 2

Connecting the display unit will make a noticeable change in the position of the mute control. No other change in the operation of my rig was observed. RV1 sets the threshold of operation of the display unit. To set it, the mute control should be adjusted until the receiver is just muted. Then adjust RV1 until the LED is just extinguished. No further adjustment should be necessary, as the threshold is now controlled by the mute control and the LED should light whenever sounds appear from the speaker. Consequently I have made RV1 a trimpot and mounted it on the Vero board with the rest of the circuit.

ABOVE—A component side view of the assembled circuit board.

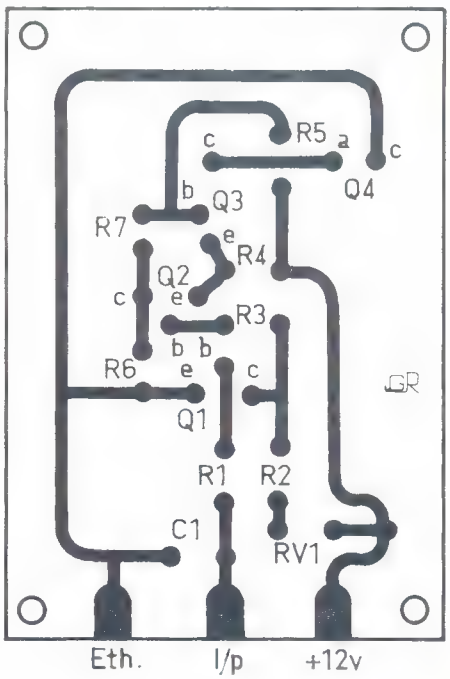
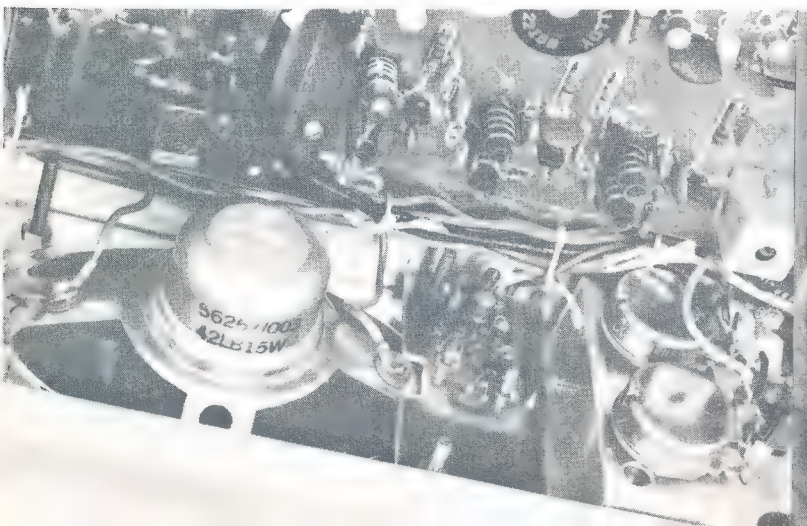


Fig. 3

BELOW—The completed unit installed in a carphone.



BELOW—Bob, VK3ZKO/T operating the carphone in which the visible mute indicator is installed.

feeding mf aerials against ground on 160 metres

Phil Williams, VK5NN

It has always been difficult to feed aerials on 1.8 MHz because of the difficulty of getting a large resonant wire on the average suburban block of land. A good compromise however, may be obtained by feeding the 80 metre (or even 40 metre) aerial as a top loaded vertical.

Satisfactory loading may be obtained with long and exhaustive testing. This method requires the use of an HF "Noise Bridge" so if you do not have one, borrow or build one.

A good earth system is essential, the best one available to most amateurs being the nearest tap in the backyard water reticulation system. This may be supplemented by connecting up further earth stakes or the galvanised iron or wire fence. The best solution for this is left to your ingenuity.

The radiating part of the antenna system is the vertical portion of the parallel feeders; in my own case, the 300 ohm open wire section of the G5RV. These are connected together and connected to the noise bridge via a series tuned circuit as shown in fig. 1. The capacitor is one of those large AWA transmitting capacitors of about 300 pF, and the coil is about 60 turns of insulated hook-up wire wound on a 2½" diameter plastic bottle with taps brought out every five turns. Select a tap which will resonate the aerial at 1.82 MHz with about 150-200 pF in series. The noise bridge will probably balance at a resistance setting of between 15 and 30 ohms which is typical of this kind of antenna.

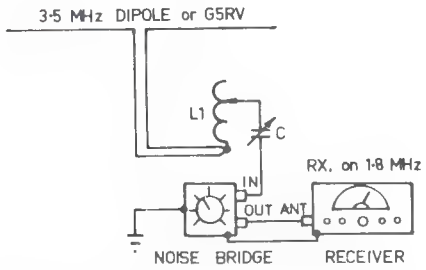


FIG 1 TO DETERMINE ANTENNA RADIATION RESISTANCE

Next wind up a matching transformer on an old TV line time-base ferrite core with the two sections Araldited together permanently, with a turns ratio to step up the impedance to 50 or 70 ohms as required. If the previous radiation resistance was, say 24 ohms, then to multiply this by 3 to make 72 ohms (approx.) would require a turns ratio of the square root of 3, or 1.7. Thus 34 turns tapped at 20 turns was tried and proved satisfactory. The winding was made by putting 12 turns distributed right around the core, then another 12 turns going round again (bringing out the tap at 20 turns, of course), and then the last 10 turns on the final circuit.

Check the impedance again with the noise bridge, readjusting C for resonance, and measure the resistance as before.

You have now made the antenna/earth system look like 72 ohms resistance by means of the ferrite transformer, with zero reactance by adjustment of C. Remove the noise bridge and feed the transmitter at point A. You now have an antenna system of 160 metres which acts like 70 ohms for the first time in history, and the Pi-network even matches and loads as it should.

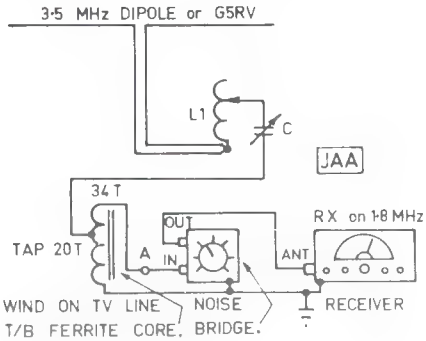
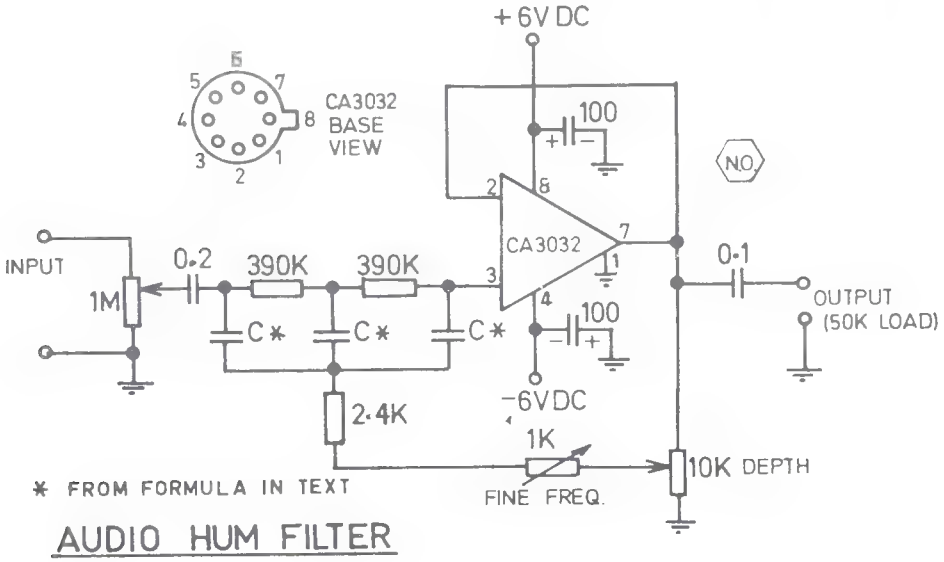


FIG 2 MATCHING TO 72 OHMS

It must be remembered that any new wires, aerials, TV's, power lines, phone lines, or even growth of trees and differences in soil moisture may require that C should be tweeked up for the maximum performance — but it only takes a few seconds. ●

an active hum filter

Reprinted from the VHFer.



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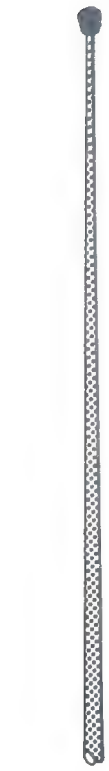

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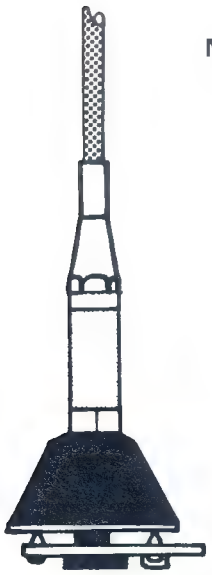

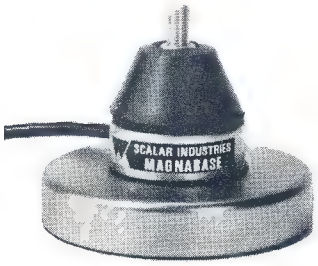

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BATTERY CONNECTORS

A READY supply of battery connectors for the rectangular 9-volt batteries in common use can be had by removing the terminal end of discarded batteries of this type and wiring the connectors appropriately. Don't forget that the formerly positive terminal now goes to the negative contact of the battery, and vice versa. — *J. Paul Alexander, K5LZT*

Reprinted from QST, August, 1967

DIODE PROTECTION FOR THE HEATH R.F. PROBE

I HAVE been building an s.s.b. rig for 6 meters. In the process of testing the transmitter, I have burned out three or four 1N34 diodes in my Heath 309-C r.f. probe by exceeding the 30-volt r.m.s. rating of the unit.

I solved the problem by connecting a NE-51 neon bulb across the diode as shown in Fig. 5. Before the p.i.v. rating of the diode is exceeded, the NE-51 conducts and acts as a protective

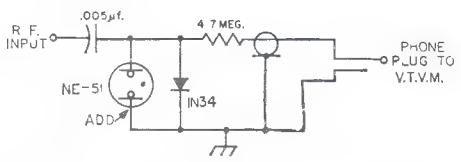

Fig. 5—The addition of a NE-51 neon bulb to the Heath r.f. probe protects the unit from overload. Resistor is ½-watt composition.

short across the diode. The particular diode now in use has not been damaged, even though it has been subjected to the same voltage levels that burned out the other diodes, and the accuracy of the probe doesn't seem to have been impaired by the addition of the NE-51. — *C. A. Danforth, K3OKG*

Reprinted from QST, May, 1968

THUMB-GROOVE INDEXING THE *HANDBOOK*

SECTIONS of the *Handbook* that are frequently used by the reader can be located quickly by filing thumb grooves in the *Handbook* pages as shown in Fig. 3 and labeling these grooves as pictured in Fig. 2. As illustrated in the second sketch, I filed thumb grooves for only three subjects: the wire-size table, the tube index and the general index. These items seem to fill 99

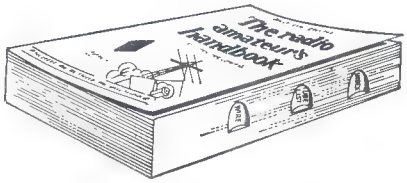

Fig. 2—K1LFH's method of thumb-groove indexing the Handbook.

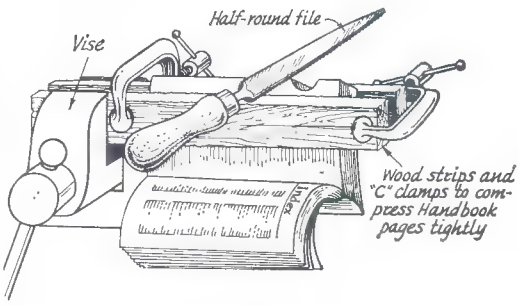

Fig. 3—One method of labeling the thumb grooves.

percent of my general requirements. Other grooves can be added at any time, but usually the sections of the book they indicate are only of short-term use. — *Norm Cucuel, K1LFH*

Reprinted from QST, January, 1967

Newcomers Notebook

with Rodney Champness VK3UG

44 Rathmullen Rd., Boronia, Vic., 3155

A Pet Hate

I find it rather surprising that people ring or write to me asking about something that is perfectly well explained in an article. For example, I was asked where a person could obtain one of the YRCS signal injectors. The article (September 73) mentioned the name of the distributor 3 times and gave his address once. I claimed no actual connection with the units, construction or sale. I use this to bring home a point. If you read an article whether it is mine or that belonging to someone else, read it thoroughly several times, and then ask, if you can't understand it. Don't expect the author to do *your* thinking for you. Naturally enough, you will have trouble with articles on complex subjects which are new to you; I do, too.

Amateur Examinations

Following upon my pet hate, we come to another problem — passing the amateur exam. No doubt most have had some trouble from time to time passing exams. The amateur exam needs to be tackled in the same way you did or still do your school exams — it is a worthwhile qualification. Too many people, from what is heard, treat it quite lightly and then bleat because they fail. To pass the exam, it is very necessary to study the syllabus and any old papers available. Once again if you do your study carefully and *understand* what is said in the text books, and *accurately* put this down in an exam, you should pass. Unfortunately many people mislearn and think they have everything accurately stored away in their head. Because of this or the fact that they have only skimmed through the study text — it is *sooooo* boring (yawn) — they only have a thin veneer of knowledge which will let them down.

There is *no substitute* for the boring study of fundamentals before you study the exciting technology of single sideband or FM, etc. Once you have mastered the fundamentals the other more complex things like SSB become much easier to understand. I give an example; do you realise that the diode signal detector stage of a superhet receiver is the same circuitry as the power supply, with the only exceptions being that the component values are different and one is usually half wave detection, the other full wave? Fascinating when you look at things that way. Can you think of other circuits which are virtually identical, but do different jobs? If you can spot these similarities you are well on the way to *knowing* electronics.

TVI, BCI and the Irate Neighbour

You may remember the January 1973 issue of *Amateur Radio* where I described in *Newcomer's Notebook* the reasons why a 6 metre transmitter can cause TVI. Do you know that not one single amateur is apparently interested enough in helping his fellow amateurs with 6 metre Channel O interference to reply to my plea? I really do hope that this isn't the attitude of the average amateur towards TVI-BCI. It is regrettable that most amateurs are not interested in developing suppression techniques to overcome TVI BCI problems. Over the years only one name really stands out and that is Rob Gurr VK5RG. September 73 issue of *Amateur Radio* shows one of his more recent articles on this very important but largely neglected and misunderstood subject of interference suppression. The average reader of *Newcomer's Notebook* will find much of interest in Rob's articles and those of a few other authors who have taken the time and effort to write for *Amateur Radio*. The Victorian Division of the WIA is hoping to get an Interference Committee going to help amateurs with advice and perhaps physical help in the solving of interference problems. I believe they had three volunteers. Aren't there any more interested amateurs who could spare a little of their time, or are they quite content to cause interference to their neighbour?

A bang on the door. Your wife opens the door and standing there is one of your neighbours frothing at the mouth, breathing fire and brimstone, because your stupid transmitting is causing his TV picture to roll — and it has also caused his beer to go flat. Now Mr Amateur you are a pretty irresponsible type to do this to your neighbour, he is trying to enjoy his TV — it was a real sexy bit that he missed too — and your voice booms over his loudspeaker and the picture gyrates, etc. In fact, I wouldn't be surprised if his last TV repair — you know that EHT tranny that blew up — wasn't caused by your transmissions. The more that I think about it the more convinced I am that not only did your transmissions (you're a nut case anyway Mr Amateur) cause the faults in the TV but the dog had never bitten anyone until you put up those stupid aerials, etc., etc., etc...

Now that you can imagine what your neighbour is thinking you are on the way to defusing the situation, I hope. It probably has taken weeks for him to get up enough courage to come and see you, and to help him, he probably instilled a goodly quantity of alcohol.

An amateur is unfortunately thought to be a little off beat by the general community. Minority groups nearly always seem to be thought of in this way, and we as amateurs are no exception to this rule. In dealing with TVI-BCI we start off being considered guilty until proven innocent. Even when proven innocent, often we are still considered guilty.

Considering all of these points we can start to formulate our method of approach to the irate neighbour. It's not nice to be accused of causing interference particularly when you know for sure that there is nothing wrong with your equipment. Of course there is nothing wrong with your equipment? Well if there is, you had better get it fixed, and fast. You cannot afford to have any defect in your equipment which may possibly cause interference. Before any neighbour gets the opportunity to find out you may be causing interference, check with your TV and broadcast receiver in the shack and be sure that you aren't. If you are certain that your equipment is clean, you could invite the complainant — your irate neighbour — out to your shack and show him that none of your radios and TV get the trouble when used right alongside the offending equipment — so called.

The main thing when you do get the neighbour breathing fire and brimstone is to keep your temper. He may have lost his and has accused you of something that isn't true — but don't lose yours.

Sure, you might tell him to go and jump in the lake if you lose your temper, but this will only cause more trouble than enough. He may get together with several other neighbours and really make things uncomfortable for you. Let him talk out his problem whilst you stay nice and calm. Once he has talked himself out, you can start to ask him about the interference. You can start to whittle the complaint down to size by asking discreet questions. Like for instance, does it occur on both TV sets? Does it really occur on all channels? Does it affect the record player, and does the volume control affect the level of interference? There are a lot of questions like these that can be asked but the ones to ask will become evident as the complainant unfolds his tale of woe. Now that you have an idea what the trouble is, invite the complainant out to the shack and show him that in fact you have no trouble in your home. You should now almost have him on the defensive, as he can see that in your home at least, there is no interference.

Don't think that you have won yet, you may be accused of turning off the particular equipment that causes the trouble. Get him to check or preferably go to his home with him and ask his wife whether she had any interference in the last quarter of an hour or so. Of course she may have altered the channel on the TV or turned the radio off or something like that, so you haven't necessarily won yet.

In the discussion with the complainant you will be able to determine which transmitter causes the trouble and to what piece-s of his equipment. Your log book is of considerable help in this regard to actually determine if in fact you are causing any trouble at all. Amateurs have been blamed for interference that they had nothing to do with. A neighbour mentioned to my wife that I was causing interference to their TV set on a particular night — I was working late that night for my employer. Another case in another area; I was accused of causing interference to a TV set; I was told that I blotted out the sound on all channels, and caused a few other troubles to the picture. I arranged my transmitter to be operated whilst I visited this neighbour. I did indeed cause interference to the sound — at a very low level and the volume control had no effect on the interference. It was caused by grid rectification in the first audio stage. The feedback to this stage incorporated the voice coil and the owner, a so-called technical person, had lengthened the speaker leads to about a resonant length for 80 metres. His other set suffered no interference at all. I instructed him how to overcome the problem

and left it up to him. Three points to note from this case — 1. the complainant's description of the trouble may be exaggerated — 2. only one of a selection of equipment was affected — therefore clearing you — and 3. enlist the aid of another amateur to operate your rig whilst you check the problem out.

It is now proved that your transmitter is clear of any other than its intended emissions, and that something is amiss with the equipment that is susceptible to RF fields. Don't criticise the electronic organ or what-have-you that has cost your neighbour perhaps $1000 or more. He will be most upset if you do condemn his pride and joy. How do you get around the unfortunate truth of saying that his piece of equipment is at fault? This is a difficult one, and if you can master this one you should do well selling refrigerators to Eskimos. Praise the good points of his piece of equipment — if any — and there will be unless it is an economy special put out at rock bottom price. You could explain that very few manufacturers are aware of the minor alterations that could be undertaken at manufacture to make domestic equipment immune to the effects of transmitters in the near vicinity. Not only could your transmitter cause break-through into his equipment, but so could the local taxi radios, police, fire-brigade, certain beacon transmitters, broadcasting transmitters, radars, and interference direct off the mains themselves. Quite a formidable list and it doesn't end there. I am at the moment mainly concentrating on Hi-Fi type interference, but the same points also apply to BCI-TVI. With the latter types of interference many more possibilities do rear their ugly heads. One thing that can be pointed out is that if a piece of equipment is proofed against these interference problems the performance of the equipment is better anyway.

I use the word neighbour in context with ***irate neighbour*** and ***complainant*** to differentiate between the attitude of your neighbour at various stages of the proceedings, so don't despair at my apparent jumping around in terms. With luck you have convinced your neighbour that the problem is something that he could not be expected to be aware of, and that manufacturers are only just now becoming aware of this problem. Some manufacturers have standard modifications to cure this problem, but unfortunately some manufacturers are reluctant to face their responsibilities.

Now how is the suppression accomplished, providing of course that the neighbour is willing to have alterations done to the equipment? If possible don't have anything to do with the modifications yourself, unless you can see that something mounted externally to his equipment may cure the problem, then proceed with caution, as you may get the blame for every fault that occurs in the equipment thereafter. If possible his serviceman should attend to the problem; perhaps you could talk to him to help with knowledge on how to fix the trouble if he is unaware. Of course if the serviceman is called in, who is going to pay a repair bill of $10 to $20 for this suppression work? This is a sticky one and the answer to it is hard to give. You may be prepared to put a few dollars towards it, even though it is his equipment. It would hurt me to do this, but it may be worthwhile, as long as everyone in the neighbourhood hasn't the same problem. If this was the case, you would soon be too poor to afford the electricity to run your rig. Whether you do the mods. to his equipment yourself for the price of components, or help pay a serviceman's bill, or suggest that you will help the serviceman but with no hint of any financial assistance, is something you will have to judge for yourself.

It will not be an easy decision. I would strongly advise you not to tackle the suppression yourself unless you know very well what you are doing, as you cannot afford to degrade the performance of his equipment. It may so happen that the equipment is quite new and under warranty. If so, it may be possible to get this done under a warranty claim. Your neighbour could certainly try this approach and it is in my opinion a very worthwhile one. Any manufacturer worthy of his salt should come to the party. Some manufacturers have been known to come to the party outside of warranty, particularly where a recurrent type of fault manifests itself.

I'm not going to tell you here this month how to go about suppression as this article is long enough now. I would suggest however that you read up the interference sections of the various amateur radio handbooks, and more particularly suggest you endeavour to obtain a copy of *Television Interference Manual* published by the RSGB, available from the booksellers who advertise *Amateur Radio* and via Magpubs. It is priced between $2 and $3.

One final point on dealing with your neighbour, the complainant. I have assumed that in all cases you will get co-operation from your neighbour but unfortunately this may not be the case at all. Some people can be far from co-operative and if anything thrive on being trouble makers, and manage to be downright vicious. These people will make life *hell* for you if they can. They would want you closed down and most definitely *don't* want their interference troubles fixed up.

I would particularly draw your attention to a section of the ***Handbook for Operators of Radio Stations in the Amateur Service*** dealing with ***Avoidance of Interference.*** Paragraphs 68 and 69 on page 18 deal with your obligations to the public and to the Licensing authority, the Postmaster General's Department. If you don't know what this says about interference you had better buy a copy from the PMG.

The last part of this point; don't let yourself be socially blackmailed by an unco-operative neighbour. There is no point in closing your station down because a neighbour is unco-operative and threatens you with some sort of legal action etc. If this type of thing threatens to erupt contact your local division of the WIA.

Coming Articles

Within the next few months I hope to have more on receiver modifications — such as the fitment of a product detector. Kevin Plew of Drouin supplied me with some information on his particular adaption. I expect to run an article on proper layout of equipment and if possible general design practices. I have yet to come up with thoughts on a simple station monitoring system, and here I don't mean a crystal set to monitor an AM transmitter. Something more elaborate than this is necessary if effective operation of an AM transmitter is to be achieved. I have yet to come up with the second article on test instruments for the amateur shack. ●

QSP

Reciprocal Licensing — Denmark.

Advice has been received from the Int. Sec. of EDR that temporary Danish amateur radio licences can be obtained by licensees holding full Australian licences when visiting Denmark for a period less than 3 months. Special application forms obtainable from the Danish P. & T. must be completed and submitted to them with a certified copy of the VK licence at least one month prior to the date when a Danish licence is required. The fee is D.Kr 50.00 payable when the visitor arrives in Denmark.

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THE AR7 (part two). This month the full alignment procedure will be described.

IF Amplifier. Slight mal-adjustment of the IF transformers will have a marked effect on the sensitivity and selectivity of the receiver. As the IF transformers are of an extremely stable type using permeability tuning and silver mica fixed condensers, it will usually be found that one or two turns of the iron core slug is all that is necessary to bring them into their original state of alignment.

Disconnect the aerial leads and power and speaker cables. Take the dust cover off and remove the receiver from the rack. Stand the receiver on its side with the underneath facing to the right and away from the rack. Reconnect the power and speaker cables. Connect an output meter across the 600 ohm secondary of the output transformer. An ordinary 5 volt AC meter with a 600 ohm 1 watt resistor across it is quite suitable. Remove the grid lead from the cap of the 6K8 and connect the output of a calibrated signal generator to the grid cap through a .005 mfd capacitor. The grid should at the same time be returned to earth through a 100K resistor.

Place the crystal switch in the **I** position, selectivity control at 8, and phasing control to centre scale. Tune the signal generator through 455kHz slowly and adjust the attenuator until a reading of half scale is indicated on the 'S' meter when tuned to a maximum peak of the IF amplifier. It should be noted that the meter reading will gradually increase until the very sharp peak of the highest amplitude is passed. Return to this peak as this indicates that the generator is exactly on the crystal filter frequency. Switch the crystal **OUT**. Using an aligning tool adjust the iron core slug screws on the top and bottom of the IF transformers. Those above the chassis are for the grid circuits, whilst those below are for the plate circuits, except in the case of IFT2, the crystal filter circuit which is below chassis. IFT2 below chassis and IFT4 above chassis should not be altered at this stage.

Starting from IFT1 turn the iron slug screws in or out until a maximum reading appears on the "S" meter with a minimum input from the generator. As the "S" meter reading increases the input from the signal generator should be decreased, thus keeping the "S" meter reading at approximately half scale. Having adjusted both grid and anode circuits to resonance (with the exception of IFT2 and IFT4 grid) as indicated by maximum reading on the "S" meter (with minimum signal input from the signal generator), check these alignments and the correct setting of the signal generator as follows:-

Switch the crystal filter into circuit, and with the selectivity control set on "10", and the phasing control in the central position, adjust the attenuator on the signal generator until a reading of approximately half scale on the "S" meter is observed. At the same time keep the audio gain control in a position which allows approximately 6 milliwatts on the 0-5 volt range of the output meter.

Rotate the signal generator frequency control slowly backwards and forwards over 455kHz, noting the peak on the "S" meter. If only one sharp maximi is observed, the alignment is correct. Should, however, two peaks occur, incorrect adjustment of the iron slugs, or incorrect setting of the signal generator, is indicated, and the procedure outlined above should berepeated.The correct peak is the highest, and at the same time, the sharpest one. Now adjust T4 grid circuit for maximum peak on the output meter. After checking these circuits several times, only one sharp peak should appear on the "S" meter, and the sensitivity should be of the order of 10 microvolts. Under these conditions, with a 10 microvolt input and 6 milliwatts output the indicated output should drop to 3 milliwatts when the generator modulation is switched off. This reading is taken with the crystal in the **OUT** position.

With the crystal in circuit, the signal-to-noise ratio should be improved. Test to see if this is so, and if this is not the case, it will generally be found that the IF frequency is not the same as the crystal frequency, i.e., 455kHz.

If the test is successful, the signal-to-noise ratio will be further improved on alignment of IFT2 crystal filter grid circuit. The method of accomplishing this is detailed in the next two paragraphs.

Insert coil unit "B" and tune in a broadcast station. Switch the crystal into circuit and set the selectivity control to "O". Adjust IFT2 for the best tonal quality on music, ignoring the volume level. When the tuning control is rotated over the station's carrier, the effect noticed should be the same as with the crystal out of circuit, except for a slight additional sharpness.

On either side of the correct adjustment of the iron slug in IFT2, the tonal response will be low and drummy, and as the dial is rotated over the station, distinct hollowness, due to the crystal filter cutting the sideband, will appear on either side of the station. The reason for this adjustment is to obtain a symmetrical and variable selectivity curve.

Where possible this adjustment should be made with the aid of a signal generator and a cathode ray oscilloscope although the instructions given in the previous paragraphs are satisfactory for normal service use.

BFO Alignment.

Upon completion of the alignment of the IF stages, the alignment of the BFO should be proceeded with as follows:-

Place SW2 in position 2 and SW5 in position 3. With a CW signal tuned in by "S" meter, and 22V applied to pin 1 of octal socket outlet, and front panel "BFO note" control in central position, adjust slug of BFO coil for zero beat. Then to ensure satisfactory normal operation, set SW2 and SW5 to position 1 and rotate "Local CW potentiometer" (R63). A note variation of at least 3kHz each side of zero beat should be obtainable. Set for zero beat. If receiver is later used on local control, R63 can, if necessary, be further adjusted to compensate for any slight changes in BFO or Reactance tube circuit values. The net result is to give correct CW operation under all conditions, i.e., signals tuned to maximum by "S" meter continue to give zero beat with "BFO note" control at central position whether receiver used locally or remotely controlled.

RF and HF Oscillator Circuits.

As with the IF amplifier, extreme accuracy is required for the RF and HF oscillator circuit alignments. The components employed in these circuits are of extremely stable type and only a fraction of a turn of the trimmer condensers, and a very small adjustment of the iron core slugs, will be required. These adjustments should be sufficient to restore the alignment of the circuits to their original accuracy. Such adjustments should only be made if you are certain that they have been made necessary through tube replacements, rough handling or extreme temperature changes, etc., and that you have the facilities to make the adjustments correctly.

The adjustments are made through the holes in the coil acceptor housing, and are marked L1, L2, L3, L4, C1, C2, C3, C4, C5, C6, C7 and C8.

L1 is the inductance adjustment on the aerial coil, L2 the inductance adjustment on the first RF coil, L3 the inductance adjustment on the second RF coil, L4 the inductance adjustment on the HF oscillator coil, C1 is the HF trimmer capacitor on the serial coil, C2 the series trimmer on coil band "E", C3 the HF trimmer capacitor on the second RF coil, C4 the series trimmer capacitor on coil band "E", C5 the HF trimmer capacitor on the second RF coil, C6 the series trimmer capacitor on coil band "E", C7 the HF trimmer capacitor on the HF oscillator coil, and C8 is the padder capacity on the HF oscillator coil. To align the RF and HF circuits connect a signal generator through a standard dummy antenna to the aerial terminal A1, the earth terminal of the dummy antenna being connected to A2, and bridged across to the earth terminal. Plug in the coil units, from Band "A" to Band "E" in turn, and check the dial readings against the calibration curves drawn on the face of the coil unit under test. Note that the BFO should be "ON" and that in conformity with the procedure outlined previously the BFO note control should be set to "O", i.e., 455 kHz. This should be tested in accordance with instructions detailed previously, before checking the receiver coil calibrations.

Observe whether zero beat occurs at the correct dial setting on the receiver. Should this be so, the calibration is correct, and there will be no necessity for adjustments to the HF oscillator circuit. If the calibration is incorrect, i.e., if the dial reading does not agree with the calibration given on the face of the coil, a small adjustment to C7 will correct the situation at the high frequency end of the band, and an adjustment of L4 will correct for the low frequency end (except in the case of Band "E" where there is no inductance adjustment). In the case of Band "E" coil, the series trimmer C8 is adjusted in place of L4.

To check the RF grid circuits alignment, switch off the BFO, and, using a 400Hz modulated signal from the signal generator, tune in a signal at approximately 15 degrees on the dial. The frequency at which the signal generator should be set for each band may be read approximately from the calibration curve on the coil unit. Adjust the trimmer capac-

ators C1, C3 and C5 for maximum peak on the "S" meter, with minimum input from the signal generator. As there will be a certain amount of interlocking between the RF circuits and the HF oscillator at the highest frequencies, it will be necessary to rotate the tuning dial to and fro over the signal to obtain the greatest peak. If this peak is obtained in the incorrect position of the dial, it will be necessary to re-check the oscillator calibration.

If Band "A" will not follow the calibration curve, capacitor C8, the series padder capacitor should be adjusted, re-setting C7 and L4 after this has been done. As these settings mutually effect each other, they may have to be checked several times.

Some difficulty may be experienced on this band with oscillation, especially if the receiver is very far out of alignment. This will occur when the RF circuits are resonating at too high a frequency, causing instability, and therefore difficulty in alignment. If the oscillator section is corrected as above, and the grid circuits are adjusted individually by connecting the signal generator to the grid cap of the second and first RF tubes in that order, the difficulty will be overcome provided precautions are taken to see that the receiver is not set to a higher frequency than 409kHz.

After checking the high frequency end of each band, adjust inductances L1, L2 and L3 for maximum peak at the lowest frequencies. Each adjustment should be checked several times.

If the receiver is properly aligned, it should have a sensitivity of approximately 1 microvolt when modulated 30 per cent. The signal to noise ratio should be 1 to 1 (in watts) or better and the image frequency attenuation at the highest frequency 26dB.

This completes the alignment procedure. In next month's issue some interesting modifications will be discussed. ●

6 UP

THE WHAT, WHERE, WHO, HASSLES & HOW MUCH BOOK FOR AMATEURS

A comprehensive compendium of companies and colleagues that collect currency for components; sell sockets and switches or suchlike for cents; arrange arclights or aardvarks for ardent amateurs; flog FT200s and 4X1000s . . . . in fact, if you have ever wondered where to get something, or perhaps, where else, then this book is for you. It does not cater for only those who build lots of gear—even if you only read about amateur radio, you need this book. It also tells you where to get the things you like to read!
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Compiled & Edited by Val & Roger Harrison (VK2ZTB)

Contests

with Peter Brown VK4PJ

Federal Contests Manager, G.P.O. Box, 638 Brisbane, Qld., 4001.

CONTEST CALENDAR

The Ross Hull VHF UHF Memorial Contest is **N O W.**
January up to 20th Ross Hull VHF-UHF.
January 12th & 13th Y U 80 meter CW DX Contest
January 25th & 27th C Q WW DX 160 CW contest.
February 2nd & 3rd ARRL International DX Phone.
February 9th & 10th 0600 GMT to 0800 GMT.
John Moyle Memorial National Field Day.
A section for everyone.
February 16th & 17th ARRL International DX. C W.
February 24th Central Coast ARC Field Day.
March 2nd & 3rd ARRL International DX Phone.
March 16th & 17th ARRL International DX CW.

If, If If, we are to make a "SMASHING" success of the ROSS HULL you should have started on your log ?????????

Stop me if you have heard that one about "putting it . . . . "

John Moyle Memorial National Field Day comes up next month
Have you got your "put put"?
Have you got your site?
Have you got your mates ?
Have you got your ice-box?

REMEMBRANCE DAY CONTEST.

I have been too busy finalising this contest to write notes as promised. Be patient and you may get an answer to your comment, if you forwarded one with your log, direct

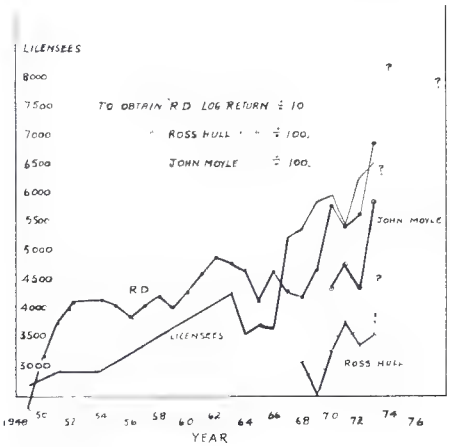
If you were not happy about the CW scoring get in touch with your Federal Councillor . . . or forever remain silent.

Most comments were on the enjoyment received from the contest, and CW scoring. What a beaut contest it will be next year.

If you are "with it" you will read the graph message right away, but PLEASE read on and make sure.

The graph shows the log return for the REMEMBRANCE DAY, ROSS HULL and JOHN MOYLE contests for each year. The "R D" contest has been taken back to the beginning but in the other two contests, for clarity the last few years only have been shown

The full single line shows the licensees for each past year read directly from the left hand column. The line jointed by large dots shows the "R D" contest logs return for each year when the related figures in the left hand column is divided by **TEN.** To obtain the ROSS HULL and JOHN MOYLE log return for any year the related figure in the left hand column is divided by **ONE HUNDRED.**



Message No 1.
As the graph is drawn, when the "R D" line is below the "Licensees" line we have less than one person in ten returning a log.

Message No 2.
When the "Ross Hull" line is below the "Licensees" line less than one person in one hundred is returning a log. We had about 36 logs in 1972-3 and over 6500 licensees; or in round figures one log in two hundred licensees. To get the Ross Hull above the line we need over 65 logs. We should be able to reach that "no hands". VK3 could do that on its own.
What about some more HF helpers assisting the VHF chaps run the Ross Hull line right off this graph for 1973-4. You still have time to get a log in.

Message No 3.
The John Moyle Memorial National Field Day Contest is on the second weekend in February.

Message No 4.
To make the graph direct reading we would have to extend down 2½ inches and the "R D" line would be in the **FIRST INCH.**

The Ross Hull and John Moyle lines would **not be worth marking in.** Draw your own graph up and see. Disappointing isn't it?????

THE GREAT CONTEST CONTEST

When. January 1974 to August 1974.
Objects. To estimate the number of logs entered for each of the next Ross Hull, John Moyle and Remembrance Day Contests, and to assist in obtaining those figures.
Rules. Mark on the graph the goals that you think we can achieve in 1974.
Update the graph with contest results.
Set a high standard within our capabilities.
Trophy. Your trophy will be satisfaction in achieving your aim.

ARRL INTERNATIONAL DX COMPETITION

Dates. Phone: First full weekends in February and March.
CW: Third full weekends in February and March.
Times. Starts at 0001 GMT Saturday and ends at 2400 GMT Sunday.
Object. DX stations QSO as many stations in the 48 contiguous US and Canada call areas as possible. Repeat contacts on additional bands are permitted.
Points. Each complete contact counts 3 points.
Exchange. Send RST and DC input power. W VEs will transmit RST and state or province.
Multiplier. On each band your multipliers are the 48 contiguous states, plus VO and VE1 through VE8, a total of 57. Your final multiplier is the sum of multipliers worked on each band. QSO points times final multiplier equals claimed score.
Logs. Logs must contain dates, times GMT, bands, exchanges and points. Logs to ARRL, 225 Main St., Newington, Connecticut, USA. 06111 no later than 2nd May.

All Bands 1.8 to 28MHz Single and multi op. Single and multi TX. Usual certification. Photos, comments, suggestions welcomed.

CQ WW DX 160 CW Contest.
Starts 2200 GMT Friday January 25th. Ends 1600 GMT Sunday Jan 27th. The stateside "DX window" is 1825-1830.

Did you get DXCC out of October contests????

YU 80 Meter CW DX Contest.
Starts 2100 GMT Saturday Jan. 12th. Ends 2100 GMT Sunday Jan. 13th.

Exchange. RST plus QSO number.
Scoring. Contacts between stations in the same country, 1 point.
Other countries on the same continent, 2 points.
Countries in other continents, 5 points. YU contacts, 10 pts.
Multiplier. One for each DXCC country and each YU prefix worked.
Final Score. QSO points by sum of DXCC's and YUs.

Mailing deadline is March 15th to SRJ Contest Committee, PO Box 48, 11001, Belgrade, Yugoslavia.
Call areas in VK will be considered as separate areas for awards. Usual summary sheet and declaration. 3 per cent duplications disqualifies. Entries may be single or multioperator. ●

VHF UHF
an expanding world

with Eric Jamieson VK5LP

Forreston, S.A., 5233
Times: GMT

AMATEUR BAND BEACONS

VKO	–	52.160	VKORSG Macquarie Island. +
		53.100	VKOMA Mawson
		53200	VKOGR Casey.
VK3	–	144.700	VK3RTG Vermont.
VK4	–	52.600	VK4WI-2 Townsville.
		144.400	VK4WI-1 Mt. Mowbullan
VK5	–	53.000	VK5VF Mt. Lofty
		144.800	VK5VF Mt. Lofty
VK6	–	52.006	VK6VF (VK6RTV) Bickley.
		52.350	VK6RTU Kalgoorlie. +
		52.900	VK6RTT Carnarvon
		144.500	VK6RTW Albany.
		145.000	VK6VF (VK6RTV) Bickley.
VK7	–	144.900	VK7RTX Devonport. +
VK8	–	52.200	VK8VF Darwin.
ZL1	–	145.100	ZL1VHF Auckland
ZL2	–	145.200	ZL2VHF Wellington
		145.250	ZL2VHP Palmerston North
ZL3	–	145.300	ZL3VHF Christchurch.
ZL4	–	145.400	ZL4VHF Dunedin.
JA	–	52.500	JA1IGY Japan.

+ Denotes change or addition.

Various other beacons exist in overseas countries and these have been listed from time to time. The Australian television stations sound carriers from Channel O around 51.750MHz are good pointers to openings, whilst New Zealand TV sound on 50.750MHz is to be heard on many occasions at good strength.

This month we are pleased to welcome back VK7RTX in Devonport which was to be operational from November. A change of call sign from the Macquarie Island beacon on 52.160 from VKOWI is noted. A big welcome to the 6 metre band for VK6RTU located at Kalgoorlie. Operational on 52.350MHz the beacon at time of writing is running 600mW to a crossed dipole antenna, with 850Hz FSK. Keying is at 12 w.p.m. The beacon is located at the Kalgoorlie School of Mines. The present low power will eventually be raised to 10 watts, but the beacon has already been copied at good strength in VK5. Thanks to Doug VK6EP for the beacon information.

Following the successful launching of this beacon, it appears it will now be used as a prototype for new 6 and 2 metre beacons for Perth, all solid-state.

Although nothing has come from VK2 officially, it seems pretty certain no beacon exists there at present, so VK2WI has been deleted from the listing. It would have been nice to see those two new beacons constructed by Roger VK2ZRH in operation from there for the DX season but . . . it's a long story why they aren't, and certainly the reasons are not suitable for discussion in this column!

THE DX SEASON.

It's arrived, and at the time of writing looks like being a real good one. Openings to VK5 from all over the continent seem the order of the day for the early part of the season, with particularly good signals coming out of VK6 this year. SSB is certainly gaining a hold on 6 metres (even I am there now!). Anyway, the first really good start to 6 metre DX this year was early November with openings to Eastern States. Spasmodic openings throughout November to the big time at the end of November, and that's as far as it's possible to include for the moment. Maybe the next issue will tell you more in detail.

Andrew VK1DA writes from Canberra, advising he lacks an antenna for 6 metres, but maybe something has been done by now. Eddie VK1VP, Reg VK1MP are both using SSB, while John VK1JL has completed a transverter for 6 and is constructing a 3 20 linear, so looks like more SSB from VK1.

On 144MHz Andrew reports quite a bit of interest from VK1, Gordon VK1NU (ex VK5NU) runs SSB. He advises other VK2 country stations showing a 2 metre interest are Keith VK2ZAA at Tumut, Ross VK2PN also Tumut, Trevor VK2ACZ Tumbarumba, Tom VK2NN Blue Mountains, also Jim VK2ZBP at Illabo.

Andrew ends his letter on a rather pathetic note when he mentions (at time of writing) that 19 months of waiting had expired for a P.M.G. licence for their VK1 beacon. Not much return for their $6 licence fee so far! Perhaps the licence will turn up as a New Year gift.

Steve VK3ZAZ writes with some news of the activities in the Central Zone of Victoria, and stations VK3AMH, VK3YFL and himself are all operational on 52, 144 and 432MHz. VK3TV 52 and 144, VK3YHA and VK3YGY 52.5 and 146.

Steve goes on to give a comprehensive listing of openings on 6 metres for November, covering no less than 14 days during the first three weeks. It is obvious Steve makes good use of TV stations as indicators for openings, particularly ABGS1 and ABNS1. On 21st ZL TV and VKOWI beacon which was peaking 40 dB over 9 around 1430; but by 1630 when VKOWW was supposed to be available there was no sign of the beacon. Steve says he has 2½ hours recorded of the "loneliest sound in the world."

The Central Zone have a net going nightly on 144.100MHz with stations from Birchip, Geelong, Ripplebrook and Bendigo taking part, others are welcome to join. Steve is operating daily from 0715 on 144MHz with 200 watts PEP in, 11 el. yagi; on 52MHz, 300 watts PEP, 7 el. yagi. altitude 1500 feet a.s.l., 20 miles NW of Ballarat and no Ch. 0 problems. Thanks for the letter Steve. Please write again.

GENERAL NEWS

From the Western Australian VHF Group News Bulletin comes a par on 52MHz band planning. It reads "Stan VK6SS reported that meetings with WIA delegates had recommended the following band use:-

DX 52.000 to 52.280MHz; RTTY 52.285 to 52.295; Beacons 52.300 to 52.500; F.M. 52.500 to 52.800; A.M. 52.800 to 53.300; Experimental 52.300 to 54.000. Calling frequencies 52.100. Meteor scatter 52.010. International Calling Frequency 52.020." I can see the A.M. boys being content with their segment! Particularly after RTTY, beacons and FM! I guess we States to the East might still find them in the DX segment when the band opens. Anyway, that's the allocation; it is included here to set you thinking.

A letter arrived (too late for inclusion in last issue) from VK4ZTL with information regarding a VHF Contest arranged by the Brisbane VHF Group for Sunday, 2nd Dec. I hope the Contest was successful, but info. is definitely required no later than 30th of month preceding issue for any hope of inclusion in the next issue. This column is happy to mention ANY coming events if you will write and give details, and don't mind condensation of what you send.

MOONBOUNCE ACTIVITY

The following is taken from November "6 UP", with thanks. I tried to get the information out of Ron VK3AKC unsuccessfully, and I feel it is of sufficient interest to devote some space to the article.

On 6th October, 1973, Ron Wilkinson VK3AKC of Geelong, Victoria, worked W2NFA the Crawford Hill VHF Club at 0357Z on 1296MHz via the moon. Signal reports were 549 to Ron and 559 to W2NFA. There was a team operating the station at W2NFA, located at New Jersey; the team comprising Dick Turrin (W2IMU — well known in moonbounce circles), Bob WA2HVA, Tony K2KLL and Roger Abson.

This is the first accredited confirmed Australia-USA contact on 1296MHz moonbounce and is a world first as well as being a new distance record for moonbounce on this band. Congratulations to Ron VK3AKC and the team at W2NFA for a fine effort. It is all the more a great accomplishment for the fact that Ron operated his equipment entirely unaided on this occasion. His antenna has to be manually aimed and adjusted to track the moon. As can be seen from the resume below, most of his equipment is home constructed.

Equipment: W2NFA: Transmitter: Modified ring amplifier from UPX-4 equipment running six 7289 valves (planar triodes similar to 2C39, same as 3CX100A5). Power output is 500 watts. Driver is mixture of valve and solid state gear. RECEIVER: Transistor preamps using MT4000 transistors into a converter using two type V766 transistors. ANTENNA: 60 feet (approx 20m) dia. parabolic dish, circular polarisation on transmit and receive.

VK3AKC: TRANSMITTER: Coaxial cavity amplifier using two 3CPX100A5 valves (cavity constructed by Trevor Niven VK5NC — ex 5ZTN) running approx. 160 watts DC input. Two blowers are used, one on the anodes and one on the cathode cavity. Ron now has a permit to run 500 watts.

The final is driven by a 2C39BA, 20 watts out which is in turn driven by a 2C39 tripler, 3 watts out, driven by a BAY96 tripler (144MHz to 432MHz). The base rig employs a heterodyne VFO and a QQE06-40 in the output. This runs by remote control.

RECEIVER: A magnetic latching relay isolates the receiver system input by switching to a 50 ohm load. ($185 worth! — donated; Ron is not rich, merely patient). There follows two cascoded preamps using NEC1336 transistors realising approx. 3.1 dB noise figure and about 12 dB gain.

The 1296MHz converter is the well known design by Les VK3ZBJ using one tuned filter ahead of it. The IF is at 144MHz and an ICL FET converter to 28MHz completes the line up. All the foregoing is mounted at the feed horn.

Coax to the operating position is used and the receiver is the RX portion of an FT200 transceiver. A dB level meter and a tape recorder are attached to the output.

ANTENNA: Home-made 20 ft dish on an azimuth-elevation mount employing "armstrong tracking method (i.e. it is manually positioned). Ron's wife usually provides the power-coffee-biscuits etc. The feed is circularly polarised, designed by Tick Turrin W2IMU, and is essentially a section of circular waveguide, all homemade.

The coax employed is ⅞" dia. type HJ5-50 under 5lb pressure of Helium. Loss at 1000MHz is 1.27 dB-100ft, a 40 ft length is used in Ron's installation. Cost? $98 . . . the type 75AW connectors cost $21.60 each. A piggy bank helps.

GENERAL: Ron can receive about 13 dB (measured) of Sun noise and 2dB from the earth. W2NFA reported that Ron's signal was 10 dB above the noise for 3 minutes of the contact. Just for interest's sake, the path loss on 1296MHz is 294 dB!

Ron would like to thank all those who took an interest in the project and gave assistance, particularly to Trevor Niven VK5NC who built the transmitter PA cavity, Varian Pty. Ltd. who donated the 3CPX100A5's, the Crawford Hill VHF Club and the US Naval Research Laboratories who provide the computer predictions for the moon position.

On the 15th October 1973, Ray Naughton VK3ATN worked VE2DFO (Canada) and W6PO (California, USA) on 144MHz moonbounce. Ray's equipment has been described previously. Briefly, he runs 150 watts (CW) to a rhombic antenna array which is semi-fixed (or more correctly, semi-moveable). Ray is returning to more moonbounce work.

On the 16th and 17th October, 1973, Chris Skeer of Hatherleigh, S.A., VK5MC worked VE2DFO (Canada) on 144.107MHz moonbounce and W6PO (California). Reports exchanged both ways were ? . . . this means 'all copied'. The reporting system for 144MHz moonbounce (also used on 432MHz) is: T (or Tango) . . . odd letter copied; M (or Mexico) . . . most letter copied; O (or Oscar) . . . all copied. This is to simplify reporting procedures, as many EME stations on 144MHz can only accommodate fixed antenna, thus there is a limited 'window' during which both stations 'see' the moon and can exchange information. The same system is used on meteor scatter. The window on these occasions was approximately 35 minutes which is rare indeed for stations using fixed antenna. Usually it is 10 - 12 minutes or less. On the 17th Chris also heard KH6NS calling and sent a report of M but no two-way contact was made. An unidentified SSB signal was also heard, the doppler shift causing it to be unreadable.

EQUIPMENT: VK5MC: TRANSMITTER: The PA uses a 3CX150 running 150 watts CW and is home built. RECEIVER: A FET preamp using U310 with a noise figure of about 1.3 dB, grounded gate configuration. This is mounted at the antenna. The converter is home-made as is the preamp and feeds into a modified FR100B receiver with a 600Hz mechanical filter in the RF. ANTENNA: Two stacked rhombics, the long axis being 648 ft long! Height is 30 ft (about 10m.) and Chris built a new shack at the feedpoint end of the rhombics to reduce feedline losses. Mohammad came to the mountain. Now that's what I call dedication to the system design!

W6PO: TRANSMITTER: 8877s running 1 KW input. RECEIVER: Preamp uses 2N245, rest of system unknown at this time. ANTENNA: 160 element collinear, semi-fixed.

VE2DFO: TRANSMITTER: PA runs 1 KW input to one 3CX250R. RECEIVER: Same system as Chris's VK5MC. Preamp uses a U310. ANTENNA: 80 element collinear, 3 metres off ground, fixed.

On the weekend of 27-28th October, Chris copied his own SSB echoes back from the moon. I believe that this is the first time an Australian amateur has achieved this. If anyone can tell me anything different — I would like to hear from them. I have no details of power etc.

I must thank Ron VK3AKC for the above information; I might add that it took some persuading, cajoling etc. to prise out of him the details of his record breaking EME contact.

It is certainly with pride we see Australian amateurs to the forefront in this kind of activity. Someone said a few years ago that anything worthwhile in the future in the way of achievement in radio would be done on VH-F-UHF and he was right. I am sure the VHF-UHF fraternity will be most interested in the EME work described above, and whilst only a few have the resources, time and willingness to undertake such mammoth tasks, the rest will read of their exploits with continuing interest. I feel sure we all have to say thank you to Roger Harrison VK2ZTB for prevailing long enough on Ron VK3AKC to get that host of information.

That will be sufficient reading for this month, so the column closes with the thought for the month: *By the time a man realizes that maybe his father was right, he usually has a son who thinks he's wrong.*

The Voice in the Hills.

Awards Column

with BRIAN AUSTIN VK5CA
P.O. Box 7A, Crafers, SA, 5152.

Amateur Radio Awards.

This new book from the Radio Society of Great Britain, compiled by the Society's HF Awards Manager, contains details of the world's major awards, where and how to apply for them, and illustrations of a number of the certificates. Many countries allot callsigns on a geographical basis, and 20 maps show the callsign areas. The final section of the book contains much useful operating information such as prefix lists, the ITU zone list and map, and the QTH locator map of Europe. It is attractively finished in a glossy hard cover and has a durable plastic binding. Amateur Radio Awards was compiled by C. R. Emary, G5GH, and has 185 pages, 8" x 10".

PZK issue a certificate to those amateurs (and listeners) who have worked (or heard) the required number of amateur stations located in countries on the Meridian of Warsaw, known as Worked 21st Meridian Award. Details are:

1. The award is available to licensed amateurs and shortwave listeners (on a "heard" basis).
2. Contacts on and after 1st January 1955 are valid
3. Applicants who are members of an IARU Affiliated Society should submit their cards, along with full details of the contacts, to the Awards Manager of their locally affiliated IARU Society for certification. All other applicants must submit their QSL cards to the sponsors.
4. The fee for the award is five IRCs.
5. The address for applications is: PZK Awards Manager, Postbox 320, Warsaw 1, Poland.

Confirmed contacts are required with 16 or more of the following countries: CR6 HA JW LA OH OH0 OK SM SP SV (Greece).

TL8 TT8 UA2 UP2 UQ2 YO YU ZA ZS ZS3 ZS9 (A2) 5A. A contact with SP (Poland) is obligatory.

Another Award which may be of interest is the Worked All YU Republics.

1. This award is available to licensed amateurs.
2. Contacts on and after 1st February 1950 are valid.
3. Do not send QSL cards. A list, showing full details of the contacts should be certified by the Awards Manager of a National Society.
4. Contacts must be made from the same location - the "same location" being taken to mean within a radius of 60 miles (100 kms) of the original location and using the same call sign.
5. The fee for the award is five IRCs.
6. The address for applications is: Awards Manager, SRJ, Box 48, 11001 Belgrade, Yugoslavia.

YU7, YU0, 4N, 4O and YT count for the Republic from which the QSO was made.

Stations require confirmed contacts with two stations in each of the six Republics. At least two bands must be used.

List of Republics:

YU1 Serbia
YU2 Croatia
YU3 Slovenia
YU4 Bosnia and Herzgovenia
YU5 Macedonia
YU6 Montenegro

ERRATUM

The list of alterations for the DXCC in last month's issue contained an error. VK4FJ should read

Phone	290-314
C.W.	293-322
Open	303-332

IARU

with Michael Owen VK3KI

IARU R3 LIAISON OFFICER. Mr M. J. Owen, the WIA's IARU R3 Liaison Officer reported that following the resignation of Mr Peter Williams as Secretary of the IARU R3 Association in September the Directors passed a postal vote acknowledging his services to the Association.

The Directors also passed a postal vote appointing Mr David Rankin, VK3QV, Secretary. David had been nominated by the Federal Council as Secretary following the resignation of Peter.

The Directors have been in correspondence in recent times in relation to the proposed World Administrative Conference that has been foreshadowed for late this decade to deal with the whole spectrum.

The 1971 Plenary Conference of the Association fixed the next Conference in 1974 to be held in Hong Kong. Obviously the most important work of this next R3 meeting will be to formulate the plans of the Region for the proposed W.A.R.C. It will be necessary for the Directors to finalise the date of the Hong Kong Conference in the near future.

You and DX

The few notes in Nov. AR produced a few responses and thanks go to the subscribers mentioned in this column for a little initial push. More paragraphs are needed because the comments came too late for the December issue and nothing else is in sight.

Lee Kinsella, VK2AXK wrote a little ditty with a moral thus

"VK2AXK tunes eighty — violent static;
tunes forty violent static
Tunes twenty silence; fifteen silence;
ten — silence. "CQ Ten" silence.
Last go, "CQ Ten" — works UA3QAQ, 9H1CH
and a string of JAs. Time 0900Z
Moral: Always try a few CQs on ten."

Martin Luther, VK4VU passes along the information that a 28MHz beacon is now in operation on Cyprus with the callsign 5B4CY. The ident is in CW and transmissions are on 28.185MHz. The equipment runs 40W to a ground plane. Reception reports are eagerly sought and should go to the beacon keeper 5B4AD at P.O. Box 1286, Limassol

John Kitchin, VK6TU asks if you have worked Wally, WA0ZUK aeronautical mobile? Wally is xH locked about 14ZZ0. With the high internal QRM he cannot read weak signals. Last heard 6th Nov. near Thailand. Ron, 6Y5SR in the Blue Mountains out of Kingston was coming in well at 19.45Z on 16th Nov. on 14175, he goes QRT around 20.00Z week-days but is on later over week ends.

Does anyone have any idea what prefix will be issued to PNG after Independence?

From the log of Kew, VK3AH, here are some DX stations with their QSL addresses:

HS3AJX	QSL MGR. K8ZTS
9Y4VV	QSL MGR. K9KXA
VK4AK	QSL MGR. P.O. Box 117, Albion, Qld. 4010.
3A2CP	QSL MGR. WA3HUP (Maryanne)
A4XFD	QSL MGR. G3XEC
KA1BL	QSL MGR. K0SVW
YJ8BD	QSL MGR. I0IJ
5W1AR	QSL MGR. WA7LFD
HL9TL	QSL MGR. ZL2AWZ
HL9VL	QSL MGR. ZL2AWZ
HR1RSP	QSL MGR. W5GTW
KC6SX	QSL MGR. JH1ECG
CR8AM	QSL MGR. WB6BGQ
CR7GJ	QSL MGR. W3ANK
4X4OC	QSL MGR. HS0ISB,C-o Box 2008,Bangkok
VQ9R	QSL MGR. P.O. Box 193, Port Victoria, Seychelles.
VS9MJ	QSL MGR. G3LQP (Roger Brown)
4W1BC	QSL MGR. G3SUW (Geoff).

Y.R.S.

with Bob Guthberlet

Methodist Manse, Kadina, S.A., 5554

To State supervisors and club members I would express my hope that Christmas will be for all a very happy occasion. With the coming of this season we are reminded that the end of another year is not far away. Clubs will be in recess until some time in 1974. What have we accomplished during this waning year? Some answers may come when the statistical forms are returned and numerically at least we shall have some idea of gains or losses.

The coming year will be one of importance to the scheme. Not the least in significance will be the supervisors conference to be held at Maitland, N.S.W. on Saturday, August 31st and Sunday, Sept. 1st. Further details concerning this meeting will be conveyed to supervisors later. It is appropriate that the venue of our conference should be the successful Maitland Radio Club which has won the I.R.E.E. Pennant four times in seven years. An important item on the agenda will be the report by the Syllabus Standardisation Committee, a report which we hope will include provision for the Novice Licence.

Will supervisors please deal promptly with the statistical forms so that I can prepare my annual report to the Federal W.I.A.

VK3BSJ RADIO-SAFARI TO WESTERN AUSTRALIA

To celebrate five years of achievement, the St. John's College Radio Club is embarking on a "Radio - Safari" to Western Australia.

The members will travel by car, with mobile transmitting facilities. During the trip they will operate on the following bands: 20 metres (14.160MHz), 40 metres (7.070 MHz) and 80 metres (3.670MHz). The call signs used will be VK3BAN (Frank, the club leader), VK3BSJ (St. John's College Radio Club), VK3ANE (Youth Radio Club's Scheme of Victoria).

The organizers of the trip would be pleased to hear from any amateur or radio club (especially Y.R.C.S.), whom they can contact either eyeball or over the air. They would also like to hear from people who could point out places of interest which could be visited.

As Frank (VK3BAN) has just been appointed State Supervisor for Victoria he would like to meet the other State Supervisors (W.A., S.A.). Just drop him a line . .

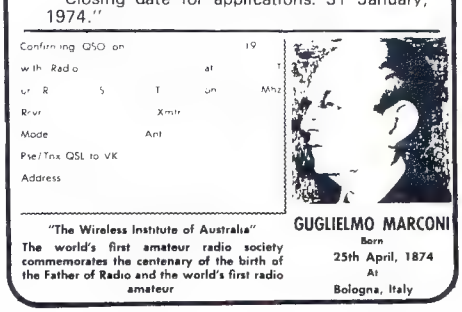
L. to R. — Kev Watson VK2BLW, Founder and President of the Maitland Radio Club; Chris Cowan VK2PZ; and Margaret Watson, on the occasion of the presentation of the fourth Pennant won by the club in seven years.

MARCONI CENTENARY QSL CARDS

"1974 is the centenary of the birth of Marconi, who always claimed to be 'only an amateur'. Amateur or not, he was responsible for the early applications of radio from which has grown the widespread use of radio as we know it today. To commemorate the birth of the father of radio the Wireless Institute of Australia, the first organisation of amateur radio operators in the world, is making available a special QSL card. These cards, a sample of which appears below, are available from the S.A. Division of the W.I.A., at $1.60 per 100 cards. Supplies are limited, so it will be a case of first in best dressed. Orders should be forwarded with the requisite amount of money to:-

Marconi Cards,
Wireless Institute of Australia,
Box 1234, G.P.O.,
ADELAIDE, S.A., 5001.

Closing date for applications: 31 January, 1974."


Confirming QSO on 19
with Radio at
or R S T on Mhz
Rcvr Xmtr
Mode Ant
Pse/Tnx QSL to VK
Address
"The Wireless Institute of Australia"
The world's first amateur radio society commemorates the centenary of the birth of the Father of Radio and the world's first radio amateur
GUGLIELMO MARCONI
Born
25th April, 1874
At
Bologna, Italy

Letters to the Editor

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the Publishers.

Dear Sir,

The advertisement put out by the Victorian Division of the Institute in the November issue of AR was very timely.

In the same issue on page 25 a letter from John Lilley VK3AZJ highlighted the plight of an amateur in the eastern suburbs of Melbourne Camberwell. Apparently, he had experienced great difficulty over the installation of an antenna tower.

One of the headings in the Victorian Division brochure reads as follows -

Assistance

with representations to Municipal Councils for the erection of masts and towers.

Surely all readers of AR would be interested to learn of the PRACTICAL help the Victorian Division provided in this particular case. How about publishing the details in the magazine?

73

David Rankin, VK3QV

The Editor,

Dear Sir,

Recent publicity in your magazine regarding the availability of a Morse Course for beginners has resulted in a number of inquiries from VK amateurs. For your information, the following are the details:-

Morse Course, in two parts.

Part 1 — eight 15 minute lessons for learning morse code

Part 2 — 1½ hours of practice, consisting of practice exercises from 6 w.p.m. up to 16 w.p.m. and some off air morse.

Both parts have a written decode for checking and correcting copy (does not apply to off-air morse).

Cost of copies is $NZ6.00 for part 1 and $NZ4.00 for part 2 plus postage. When ordering please state the following:

Name and address
tape — cassette or reel
speed 3¾ or 1⅞ i.p.s. (reel only)
type ½ track or ¼ track (reel only).

Address all correspondence to:-

N.R.T.S.,
P.O. Box 1718,
Palmerston North,
NEW ZEALAND.

Harry N. Wiggins ZL2BFR
Manager, NZART, Novice
Training Scheme.

The Editor,

Dear Sir,

I wish to draw readers' attention to the article **A Wide-band Pre-amp for the FTDX 401 and FT 200** on page 10 of November's AR.

The circuit and brief notes were originally sent to the owner of a FTDX401 for his information. These were passed on to the Technical Editor of the VK5 Divisional Bulletin for analysis and possible publication in that journal.

The notes were forwarded to AR and published without my knowledge and as such contain several mistakes.

1. The circuit was devised for use in the FTDX401 and was not intended or implied as being suitable for the FT200. Use in the FT200 would probably destroy the TIS88 transistor as the FT200 aerial coils in the transmit mode are used as tuned anode circuits for the driver stage to the finals.
2. The circuit should include a 1000pf capacitor between collector of the OC170 and grid of the 6BZ6 RF amplifier. This capacitor is referred to in the text.
3. Paragraph four should read "No cross modulation has been observed to date even from an FT200 **100** yards away . . . etc."

Yours faithfully

J.W.K. Adams
VK5SU

A long letter from Mr Pieniacki of Lismore complains that AR in recent years has forgotten the SWL's and younger members with slender pockets. He claims these members buy disposals gear fairly cheaply but are stuck for lack of circuit and modification details. He believes the trend today is towards the supermarket amateur who understands nothing beyond the knobs. His plea is for the not so well off. Foster **AMATEUR** radio. Print articles, he writes, on the old sets and even many of the old timers would appreciate this service also.

This is what NEWCOMER'S NOTEBOOK is all about — Ed.

Magazine Index

With Syd Clark, VK3ASC

CQ October 1973.
Storage Tube Scan Conversion: Oscar-6 News and Orbital Predictions: 160 Metre AM from a Motorola - 80D Transmitter Strip: Hewlett-Packard Digital Multi-Meter Fits in the Palm of your Hand: Range Effects During Oscar Passes.

HAM RADIO August 1973.
Phasing Type Communications Receiver: High-Gain Log Periodic Antenna: Two Metre FM Base Station: Television DX: Selecting Batteries: 1296 MHz Noise Generator: Two Metre Frequency Synthesizer.

QST October 1973.
A Poor Ham's QRP Transmatch: 8873's in a Two-Kilowatt Amplifier: Another Look at Reflections, Part 4: The Tunable Crystal Oscillator: A Tuner for ATV Applications.

RADIO COMMUNICATION. October 1973.
The Cadet Direct Conversion Receiver: Notes on Simple Aerial Arrangement for Oscar 6: 160 M SSB Transceiver for Portable Operation: (Review) Heathkit HA-202 144MHz FM Amplifier.

RADIO ZS July 1973.
The Quarter Wave and Five-eighth Wave Antenna for Two Metre Mobile: Technical Description of the Netset.

SHORTWAVE MAGAZINE July 1973.
General Coverage Receiver: As it Was in the Beginning: QRO Linear for Two Metres.

"73" MAGAZINE Sept. 1973.
Jordan: IC Repeater Logic System: Mono band Log-periodic Antennas, Part 2: Calibrating Your Tunable 2 Metre Receiver with Surplus Crystals: PLL IC Applications for Hams: The Touch Pad: S-Meter for an HW-7: Inverted Doppler?: The L'eggs Injector Antenna: A Two Metre Converter: Versatile IC Keyer: Measure Antenna Impedance with Your SWR Bridge: Potentiometers: An Improved Method to Prune Antennas: A Visit to Sentry: The QSL Manager.

CQ November 1973.
A Memory for the Integrated Circuit Morse Keyboard: Tips for Copying CW on Paper: No Room for Tower Guys?: The WD 11.

The Australian EEB is back again with copies for February & April 1973 to hand. Subjects covered are:- Car Exhaust Analyser: Low Cost (Abt. $20) Digital Frequency Meter: Semiconductor Testing: A New Synthesizer Principle etc.

20 Years Ago

with Ron Fisher VK3OM

JANUARY 1954.

Technical articles were well represented in the January 1954 issue of Amateur Radio. Leading off was a 'Simple Converter for Two Metres' by Fred Bail VK3YS. Fred used a single 6J6 as a combined mixer oscillator with an output of about 7.4MHz.

One of the popular disposals receivers of the post war vintage was the Bendix RA-10-FA. E. Cornelius VK6EC showed how to modify this receiver for amateur use. A new front panel was added to improve both appearance and operating convenience, also the front end tuning was modified to enable full band spread of the 80, 40, 20 and 15 metre bands.

The Bendix RA-10 was also the subject of G. Loveday's article, a 'Countryman's Double Conversion Receiver'. As the original receiver was a single conversion design with a 1600kHz IF, selectivity was not a good point. Mr Loveday used the double conversion principle, converting down to 455kHz.

The rules of the National Field Day make interesting comparison with our current Field Day. Firstly there was a power limit of 25 watts input. Multiple transmitters could be used but only one transmitter could be used at any one time and the contest was of twelve hours duration on the Sunday only.

VK7WI was operating from the 7th to the 17th of January at the Tasmanian Sesqui-Centenary Celebrations Science Exhibition. A remote operation system was being arranged to overcome the high noise level at the Hobart City Hall.

DX highlights for January were that VU5AB of the Nicobar Islands was operating on 14MHz and DL4QX was organising a DX-pedition to Crete during early 1954.

Intruder Watch

with Alf Chandler VK3LC

1536 High Street, Glen Iris, 3146

We have completed yet another year with Intruder Watch with some successes and some disappointments, but on the whole it has been a successful year from our point of view because we now have a Co-ordinator in every State. Some are very active yet others not quite so active as I should like them to be. Our monthly net on 3580kHz the second Monday of each month at 0900 GMT is spasmodic and I should like to have some participation from Members as well as Co-ordinators.

We have a very cordial relationship with the Radio Branch and so long as they are satisfied that reports are genuine Intruders, they will follow up by monitoring signals at their own monitoring stations. Another success is noted from a letter received from RSGB which states — "The administration running TCX (CENTO) have agreed to move this station out of t band, and from this end I can confirm that this station has not been heard for some weeks". TCX was reported by WIA in the 14 MHz band several times and was situated in Turkey.

At the moment we are chasing GYS in Singapore which has several spurious signals in the 14MHz band. We have had success with a similar situation from 3DN in Fiji, so there is no reason why this one should not be resolved. Thus, some Observers are already doing spartan service, but we need more and I am closing this year's activities with a plea once again for Member Observers to participate in the activities of the Intruder Watch and identify themselves with their Divisional Co-ordinator. Will all Members accept my grateful thanks for work done in the past, and have a Happy New Year.

AARTG

with Ken Kelly VK4MJ

285 Monaco Street, Surfers Paradise, Qld., 4217

I am sorry that I have not had time to write to all those who have enquired about RTTY and in particular those who have expressed interest in joining A.A.R.T.G., as I have been away on holiday for the past six weeks. I am now busy trying to catch up with all the mail, and for those who have enquired about availability of machines, I can say that so far nothing definite ha been heard as to when they may be available. Howev there are several ears to the ground, ready to pounce.

This month we can report that there are now 26 members enrolled in VK6, including Ron, VK9RA, who is located at Christmas Island. He hopes to be operational very soon, and should be a popular new country for RTTY. In VK4 there are sixteen members, and several are working hard on their gear.

The weekly skeds on Sunday afternoons have been disappointing, and only one or two stations worked or heard. Much of this may be attributed to the difficulty in arranging a time to suit all States, and what with the time differences and the rather erratic propagation of late, this round-up has not been the success we had hoped. It might be better to arrange different sked times between pairs of States, rather than try to hook up the lot at the same time, and during the next month I will try to find out suitable times for this.

The progress in the state of the RTTY art at present suggests that ere long the page printer may be replaced by the video read out, and of course gear of this nature is already being advertised in the U.S.A. (but at a price!). For some time I have been trying, without much success, to obtain practical data on the way this equipment operates. I feel that it would be a very useful club project if we could produce a prototype suitable for amateur construction, and I wonder whether any member has any information which would enable a start to be made. If no club members have anything on this, perhaps someone could make a few enquiries which would give a lead, and I will be grateful to receive any information whatsoever.

INTRUDER WATCH SUMMARY FOR QUARTER ENDING 30th SEPTEMBER, 1973

Frequency kHz.	Mode.	Date.	Time. GMT.	Ident.	Traffic & Remarks.
21140	A1	31 July	0800	MH2	Continuous tape "CQ de MH2"
14031	A1	15 Aug	0700	8B18	"OVE3 de 8B18" repeats.
14039-40	A1	1 June	0920	PBJ	Many times, qsv.
		15 Aug	0700		
14042	A1	15 Aug	0700	P8DF	"8FZ6 de P8DF qua 20"
14049	A1	10 Sept	1000	7BQ2	"7AC de 7BQ2 qsa 2-2" (Indon)
14050	A1	Sept	1230	7BD4	"7AD8 de 7BD4" repeats (Indon)
14051-6	A1	various	various	7BD2	"7AJ de 7BD2" chirpy note (Indon)
14051	A1	June	various	WFW6	"UK4 de WFW6" 4 letter gps.
14060	A1	15 Aug	0700	7BD2	. . . de 7BD2 qsa 2" (Indon)
14060	F1	various	various	—	RTTY.
14071	F1	various	various	—	RTTY.
14080	A1	5 Sept	1020	COK	"ITY de COK clg" repeats.
14080	A1	20 Aug	2100	UY5	"vvv UY5"
14080	F1	various	various	—	RTTY.
14090	F1	various	various	—	RTTY.
14095	F1	various	various	—	RTTY.
14099	A1	1 June	0600	TCX	RTTY. (Read outs submitted).
14102-3	F1	various	various	—	RTTY.
14105	F1	various	various	—	RTTY.
14110	F1	various	various	—	RTTY.
14116	A1	21 July	0630	DBD	"vvv de DBD".
14123	A1	4 June	2300	FH6	Call signs.
14134	F1	various	various	—	RTTY.
14137	A4	various	various	—	Facsimile.
14137	F1	various	various	—	RTTY.
14148	F1	various	various	—	RTTY.
14165	F1	various	various	—	RTTY.
14165	A1	12 June	2230	QLR1	"vvv de QLR1"
14180	A1	25 July	0630	UGHG	"vvv de UGHG"
14190	F1	various	various	—	RTTY.
14195	A1	25 July	0030	XQXL	4 letter groups.
14199	A1	23 July	0700	KAS	Call signs.
14205	F1	various	various	—	RTTY.
14216	A1	5 Aug	2300	1S1NA	vvv and Z sigs.
14236	F1	17 Sept	1215	BIL31	RTTY. (Read outs submitted).
14274	A1	6 Aug	0840	U5M	Calling HJ & 4 letter gps.
14280	A1	1 June	2045	FBTF	"FUJF de FUTF".
14280	A1	1 June	2045	FBJF	"FUTF de FUJF".
14292	A1	4 July	0715	8FZH	"VVV de 8FZH".

Frequency kHz.	Mode.	Date.	Time. GMT.	Ident.	Traffic & Remarks.
7004	A1	2 Sept	1130	3TTL	"QS5 de 3TTL" repeats.
7008	A3	daily	2100	—	Propaganda B-c.
7009	A1	4 Sept	1340	L724	"QFGP de L724"
7010	A3	daily	2100	—	Foreign B-c-
7013	A1	24 Aug	1150	3TTL	"QS5 de 3TTL".
7022	A1	10 Sept	1020	CMMS	"BXTI de CMMS qsv k".
7029	A1	16 July	2030	CPGD	"4GG8 de CPGD qsv k".
7030	A1	14 July	2100	AAQJ	"OD9X de AAQJ" repeats.
7035	A3	daily	2030	—	Foreign B-c.
7044	A1	22 July	1115	AAQJ	"OD9X de AAQJ" 4 letter gps.
7050	A3J	6 Aug	0400	—	Japanese language fishing boats
7050	A3	daily	2030	—	Foreign B-c
7056	A3	daily	2030	—	Foreign B-c
7065	A3	daily	2030	—	Foreign B-c
7075	A3	daily	2030	—	Foreign B-c
7090	A3	daily	2030	—	Radio Spain
7132	A3	Saturdays	2100	—	Radio Manila, reb-c BBC.
3503	A1	17 Aug	2100	VTT20	VTN40 de VTT20 & reverse.
3507	A1	3 Sept	1200	3MA	"CAP de 3MA26-32-42-44". 5 letter gps "freq 13766-9090-6500-3507"
3522	A1	3 Sept	1215	BQD11	"TBO de BQD11" repeats.

Following have been heard since 30th September.

14296	F1	5 Oct	1030	HMD8	RTTY (Read outs submitted)
14237.50	F1	14 Oct	1200	BIL31	RTTY (Read outs submitted)
14237.08	F1	21 Oct	1150	BIL31	RTTY (Read outs submitted)
14296.32	F1	18 Oct	1015	PYH223	RTTY (Read outs submitted)
14038	A1	20 Oct	1215	W5P	Calls only.
14133	A1	20 Oct	1400	SPH	"vvv de SPH4-6-8-9 qsx 8 12 16 22 mhz k" (spurious?)
14198.5	A1	20 Oct	1300	GYS	Call sign tape "GYS4-5-6-7
		21 Oct	1030		(Spurious)
14236	A1	21 Oct	1030	2POJ	"WJWO de 2POJ qsv k"
14298.36	F1	21 Oct	1030	HMD7	RTTY (Read outs submitted)..

SPH (Poland) and GYS (Singapore) appear to be spurious signals, but are potent here (S7 to S9). Also the HMD stations and BIL31 are S9 here. The bearings point to Asia.

Achtung, Achtung Resonanzmeter TR30/300 Von Grundig

There are only six of these fantastic resonance meters left in Australia. There aren't going to be any more either, because they are too expensive to manufacture. So all you blokes who are really keen to measure the frequency of your Tx's had better hurry.

This is no ordinary Grid Dip job—the cheap stuff we normally sell you looks like a crystal set in comparison with your rig. So don't you deserve the very best? Well cop this—Stabality, plus or minus 1.5%, long term stability plus or minus 0.5%, 7 semi-conductors including a FET and a frequency range to 300MHz. Operates as a GDO, as well as an absorption frequency meter plus AM test generator. Temperature drift is only 2 x 10 °/C. Have you ever seen a spec like that before? Wait till you see the instructions! ! The German sounds even better—we'll leave you with this quote 'Die Resonanzmeter TR30/300 dienen zur Bestimmung der Resonanzfrequenz van Schwingkreisen aller Art sowie zur Messung der Frequenz von Oszillatoren oder Sendern' Don't you wish you could too?

Then send **$126.50** immediately, there are only six left.—THERE WON'T BE ANY MORE, EVER!

30 Watt Kit—Look out for Jim Rowe's comments on our Superkit in Electronics Australia, or better still build one yourself. I expect there'll be the usual rush when the article appears so why not miss it by sending now?

Uses the Solid State Scientific transistors described in our cat. Virtually indestructible, withstand severe VSWR. Over 30W from 12.6V at 144MHz—even more from 13.8V.

7W stage using 2N5589—complete kit. **$11.50** (All P & P 50c)

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30W stage using 2N5591—complete kit **$17.50**

Add it all together and save $5.00 by sending for complete kit 300mW in 30W out — only **$37.50** (PCB's only, state which, at $1.50 per stage)

TWO NEW INSTRUMENTS FOR AMATEURS

200MHz Counter Kit (EA Dec. 73). Fully solid state with latest MSI, ICs and LED Readout. Uses 23 ICs so it's straightforward to build and very economical. Our kit is in two parts—basic counter, 4½ decades to 20MHz, complete kit (Yes crystal included!) for only **$99.00.** Prescaler to 200MHz only $26 . So you can build a complete 200MHz counter for only **$125** (All P & P 50c).

Digital Voltmeter (EA Oct 73) with 3½ digit readout and 0.5% plus or minus 1 digit accuracy. Uses the Analog Devices LED panelmeter. Complete kit covers 200mV to 2kV and 20 ohm to 200K for just **$145.** Panelmeter alone **$102** (Data in our catalogue) P & P 50c.

BOOKS

Fresh stocks have arrived so if you missed our ARRL sell-out, hurry in now and browse (we don't mind you reading in the lunch hour so long as you don't drop your wads (sandwiches) all over our new carpet) and naturally if you bought one or two books the accountant will be happy. All P & P 50c.

A Course in Radio Fundamentals—26 chapters for home study. Starts from basic theory goes right through to feedback, etc. **$3.75**

The ARRL Antenna Book—An accumulation of years of amateur experience. 5 Chapters of theory plus chapters on various designs **$4.25**

Hints and Kinks—If you've got a small amount of money and a good junk box, then away you go! Hundreds of clever ideas. **$2.00**

The Radio Amateur's Operating Manual—Written for those who must have the finest technique. 9 chapters cover all aspects **$3.00**

FM and Repeaters for the Radio Amateur—A good guide written by amateur experts. Wealth of information plus special jargon section. **$4,75**

SSB for the Radio Amateur—A digest of articles from QST the amateur magazine tells all about Single Side Band. Theory and Practice. **$4.75**

The Radio Amateur's VHF Manual—A thorough treatment including history. Principles, circuits, test gear, etc, with a practical emphasis. **$4.25**

Learning the Radiotelegraph Code—Uses the 'Sound' conception method which greatly simplifies code learning. No need to have help. **$1.00**

The Radio Amateur's Handbook—Latest edition of this widely used book. 25 chapters and over 600 pages cover everything. Textbook, Data book, Construction Manual. THE reference book. **$6.50**

Also a further shipment of 'The World Radio and TV Handbook' the complete directory of Radio and TV stations. 400 pages giving complete and exact info. on every, yes EVERY, transmitting station in the world. SWL's were queuing up for this one when they first arrived. Useful DXers reference book and many sold to professional radio people. Recommended by Radio Australia—need we say more? **$5.75** (P & P 75c).

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Ionospheric Predictions

with Bruce Bathols, VK3ASE December 1973.

JANUARY 1974.

Listed below are the Ionospheric Predictions for January 1974 from information supplied by the Ionospheric Prediction Service Division of the Commonwealth Bureau of Meteorology.

Times are G.M.T.

28MHz

Activity in this band is predicted to be less than in previous months. However some good openings to countries within the tropics and nearby areas are predicted at around noon local time and also at sunset. —

Worthwhile having a look at!!

.21MHz

VK2 to	
SU	0500-1000
ZS	0900-1000
G (S.P.)	0800-0900
G (L.P.)	1000
UA	0500-0900
W6	2100-0200
VK6 to	
SU	0500-1200
ZS	0700-1200
G (S.P.)	0800-1200
UA	0400-1100
W6	0100-0200
VK7 to	
SU	0500-1100
G (S.P.)	0800-1100
G (L.P.)	1000
UA	0500-1000
W6	2200-0200

14MHz

VK2 to	
ZL	1900-1500
SU	0900-1800, 2100-2300
KH6	0400-1300, 1800-2100
ZS	1200-1600, 2000
G (S.P.)	0700-1700
G (L.P.)	0900-1300
VKO	2000-1400
VE3 (S.P.)	1500-2100
VE3 (L.P.)	1500-1600, 2000-2300
W1	1400-2000
VK9	2000-1700
PY	0400-1200, 1900-2300
W6	1600-2100
JA	0500-1500, 2200-2300
9G1 (S.P.)	1400-1600, 2000-2400
9G1 (L.P.)	0400, 0800-2100
VK6 to	
SU	1000-1900, 2300-2400
ZS	0300, 1200-1800
G (S.P.)	0900-1700
G (L.P.)	1000-1600
VE3 (S.P.)	1400-1900, 2200-2400
VE3 (L.P.)	2200-2400
UA	0800-1400
PY	0800-1100, 2200-0200
W6	1700-1800, 2100-2200
VK7 to	
SU	1000-1700, 2100-2400
ZS	1200-1600, 2000
G (S.P.)	0800-1600
G (L.P.)	0900-1400
VE3 (S.P.)	0800-1400
VE3 (L.P.)	1300-1500, 2100-2300
UA	0700-1400
PY	1800-1200
W6	1600-2000

7MHz

VK2 to	
SU	1400-2000
ZS	1600-2000
G (S.P.)	1400-2000
VE3 (S.P.)	0800-1400
VE3 (L.P.)	2000
UA	1200-2000
W6	0800-1600
VK6 to	
SU	1500-2300
ZS	1600-2200
G (S.P.)	1500-2200
VE3 (S.P.)	1000-1500, 2100
UA	1300-2200
W6	1000-1600

Hamads

FOR SALE

60W AM VFO Tx genemotor, BC455B Rx and other parts, write for list. Best offer for lot. VK2QB, QTHR. but Post Code 2288.

AWA MR20A, 2M FM Unit, with AC P/S, speaker, Mic., Circuit diagram; Tx has 6146, RX has block filter and limiter meter, Xtls for 146: $60. **Homebrew** GDO Nuvistor 1.3 to 175MHz, $10. G. R. Hovey, VK1ZHG, University House, P.O. Box 1535, Canberra City, 2601.

Collins Transceiver KWM-2 Serial 11108 with Waters Q-Multiplier/Notch Filter 337-M2 original factory installation. PSU's available are PM-2 AC and 516E-1 DC units with all cables and instruction manuals. Package deal $750 or offer. Would consider splitting units. Phone or write VK6RU. QTHR (but Post Code 6015). Ph.: (092) 85-9664.

Mosley TA33 Jr. Beam and Stolle Rotator with 70' of 5 core cable. All in good condtion and working perfectly, $140. VK3ASE. QTHR. Ph.: (03) 90-6424.

Lafayette Amateur Band Rx Type HA-800 complete with 100kHz cal. Xtl and instruction book. 6 bands 80 to 6m. 240V AC and 12V DC in mint condition. $175, ONO. VK2HW. QTHR. Ph.: (02) 77-4126.

FT200 Complete with FP200 (AC) and DC200 (DC) PSU. All in first class condition. The lot for $380. VK3HC. QTHR Ph.: Bus. (03) 49-1017 AH (03) 45-2536

TCA 1674 FM Transceiver, 20W Hi Band mod. with Xtals. Ch. B-4 inbuilt DC PSU rocking armature mike. **Low Band TCA Transceivers** (2), (1 x 1674) (1 x 1645) unmodified. What offers? VK2AFF. QTHR. Ph.: (042) 61-4287.

Trio-TR2E, AM-FM, AC-DC, 2 Metre, fully tuneable, transmitter receiver. Has netting and Xtl. controls. Complete with Xtls, Mic. Manual, in original carton and in mint condition. Best offer. VK2BJK. QTHR. Ph.: (02) 449-1598.

AWA BS50D Base Stn. $65; **RCIA** Remote control unit $20; **AWA** MR15A mobile align. Ch. B. $60; **AWA** power supply suit MR10/20 $5; **Gen.** Cover Rx. $50; **Talc-Bac** AM Transceiver 6M $15; **GDO** $35; Exchange for SSTV components, VK4ZKI. QTHR. Ph.: (072) 76-1284.

Silent Keys

R. D. O'May, VK7OM

S. J. Henkel, VK4SH

AR7 Receivers (2) complete with coil boxes, and working, with circuits. What offers?. VK2ZYO. QTHR.

Swan 500 Transceiver, Home built copy, 10 through 80 metres, U and LSB, incremental tuning, 200W output, complete with separate AC and DC PSU's, ready to use, excellent quality and finish: $300, ONO VK2KM, QTHR, but Post Code 2750. Ph.: Bus. (02) 560-8644 Ext. 47.

Going Overseas, cleaning shack. Selling Tel-equipment Serviscope S32 CRO $90. Eddystone Comm. Rx 840A $70. Star Ham Rx SR600 $125. Yaesu FT200 $210. Linear FL DX 2000 $160. FT101 $390. Mosley Triband 3 El 1 kw Yagi $70. Channel Master Rotator $25. Hills 60 ft. crank-up tower $60. Webster Triband Helical $17. VK2BAN. QTHR. Ph.: (02) 524-8243.

WANTED

40" Length Comalco E865 extrusion. Alternatively is anyone interested in clubbing together to purchase minimum order. D. McConnell, 322 Lig Street, Ballarat, Vic. 3350.

Prop-Pitch Motor in good condition. VK3HK. QTHR.

Communications Receiver General Coverage or Drake 2B or similar unit. Details to G. Anselme, 325 Marwedel Street, North Rockhampton, 4701, Qld. Ph.: (079) 28-4007.

Facsimile Machine any condition. VK2AAK, Kulnura. QTHR. Ph.: 76-1261.

Instruction Manual or circuit diagram of the Rx BC-624-A or the 522. VHF Rx. Buy or borrow for copying. T. Bird, 75 Horatio Street, Annerley, Brisbane, Qld., 4103.

6C6 and 6D6 tubes, cheap, for SWL. R. Edwards, L60181. 30 Panton Crescent, Karinyup, 6018.

Morse Key, Clipsal, PMG type. VK3QW. QTHR Ph.: (03) 560-0645.

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or
Any holiday of choice to value of **$650**
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Five year subscription to W.I.A. **$60**

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Portable typewriter **$50**

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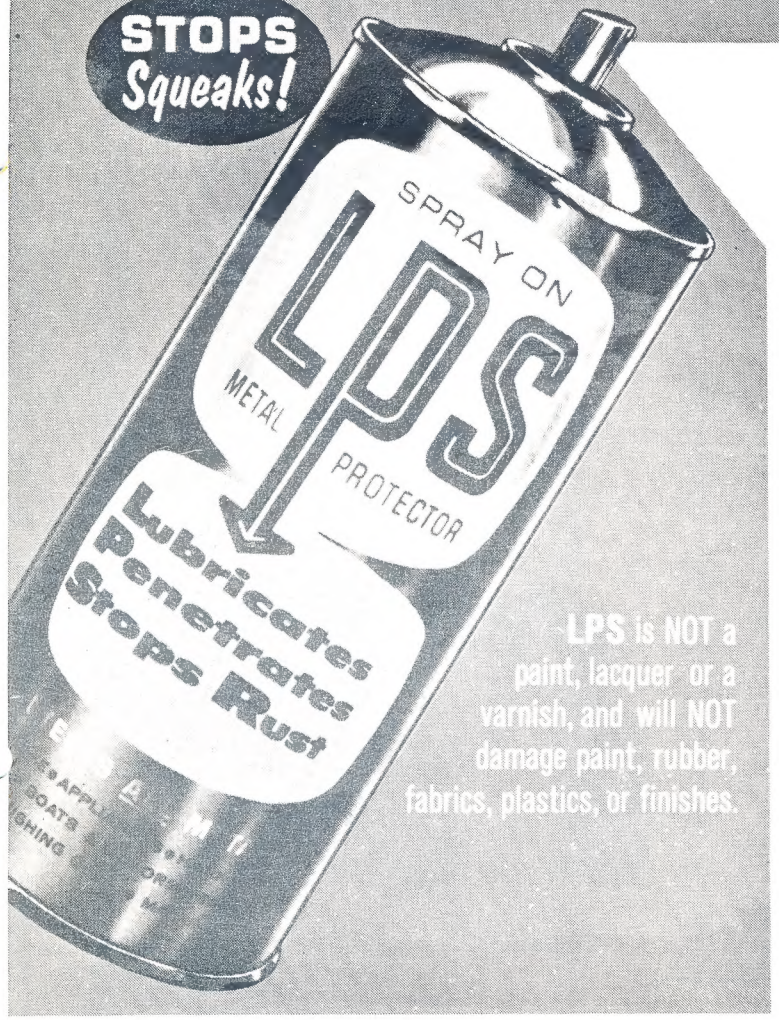

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TECHNICAL INFORMATION

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Less than 0.0001 inch non-greasy molecular film with capillary action that spreads evenly and easily to seal out moisture at very low cost.

Rust Inhibitor: Protects **all** metals from rust and corrosion.

Water Displacing Compound: Dries out mechanical and electrical systems fast.

Lubricant: **Lubricates** even the most delicate mechanisms; non-gummy, non-sticky; does not pick up dust or dirt.

Penetrant: Penetrates to loosen frozen parts in seconds.

Volume Resistivity per ASTM D-257: Room temperature, ohm/cm.; 1.04 x 10^{12}.

Dielectric Constant per ASTM-877:
Dielectric Constant 2.11, Dissipation Factor: 0.02.

Dielectric Strength per ASTM D-150:
Breakdown Voltage 0.1 inch gap, 32,000 volts.
Dielectric Strength volts/inch, 320,000 volts.

Flash Point (Dried Film), 900 degrees F.
Fire Point (Dried Film), 900 degrees F.

TESTS AND RESULTS: 950 degrees F.

Lawrence Hydrogen Embrittlement Test for Safety on High Tensile Strength Steels: Passed. Certified safe within limits of Douglas Service Bulletin 13-1 and Boeing D6 17487.

Mil. Spec. C-16173 D-Grade 3, Passed.
Mil. Spec. C-23411, Passed.

Swiss Federal Government Testing Authority for Industry: Passed 7-Day Rust Test for acid and salt water. Passed Weiland Machine Test for Lubricity as being superior to mineral oil plus additives.

LPS Products conform to Federal Mil. Specs. C-23411 and/or C-161730

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VOL. 42, No. 1

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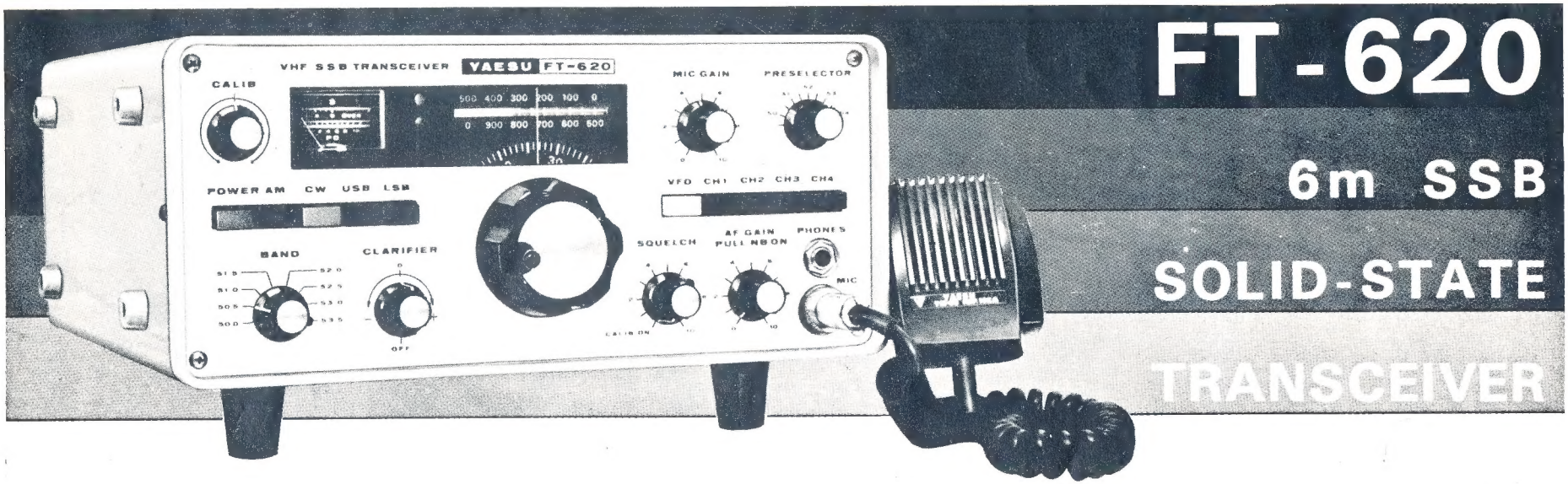

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